

JBA Consulting		Page 1
The Library St Philips Courtyard Colleshill B46 3AD	Malvern View Park Leisure Detailed Surface Water Drainage Strategy	
Date 04/04/2022 File EHU-JBAU-XX-XX-HM-C-000...	Designed by Adriana Matlak Checked by Luke Virgo	
Micro Drainage	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm2

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	2
FEH Rainfall Version	1999
Site Location GB 370200 252250 SO 70200 52250	
C (1km)	-0.027
D1 (1km)	0.358
D2 (1km)	0.391
D3 (1km)	0.280
E (1km)	0.300
F (1km)	2.381
Maximum Rainfall (mm/hr)	50
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.200
Maximum Backdrop Height (m)	1.500
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for Storm2

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	4.741	0.422	11.2	0.008	6.00	0.0	0.600	o	100	Pipe/Conduit	
1.001	11.210	0.600	18.7	0.012	0.00	0.0	0.600	o	100	Pipe/Conduit	
2.000	4.475	0.226	19.8	0.008	6.00	0.0	0.600	o	100	Pipe/Conduit	
3.000	5.239	0.377	13.9	0.008	6.00	0.0	0.600	o	100	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	6.03	125.164	0.008	0.0	0.0	0.0	2.32	18.2	1.1
1.001	50.00	6.14	124.742	0.020	0.0	0.0	0.0	1.79	14.1	2.7
2.000	50.00	6.04	124.369	0.008	0.0	0.0	0.0	1.74	13.7	1.1
3.000	50.00	6.04	125.074	0.008	0.0	0.0	0.0	2.08	16.4	1.1

JBA Consulting										Page 2		
The Library St Philips Courtyard Coleshill B46 3AD					Malvern View Park Leisure Detailed Surface Water Drainage Strategy							
Date 04/04/2022 File EHU-JBAU-XX-XX-HM-C-000...					Designed by Adriana Matlak Checked by Luke Virgo							
Micro Drainage					Network 2020.1.3							
Network Design Table for Storm2												
PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section	Type	Auto Design
1.002	10.979	0.549	20.0	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit		
4.000	4.864	0.294	16.5	0.008	6.00	0.0	0.600	o	100	Pipe/Conduit		
5.000	4.570	0.430	10.6	0.008	6.00	0.0	0.600	o	100	Pipe/Conduit		
1.003	13.411	0.236	56.7	0.013	0.00	0.0	0.600	o	150	Pipe/Conduit		
6.000	5.687	0.101	56.3	0.008	6.00	0.0	0.600	o	100	Pipe/Conduit		
7.000	7.992	0.166	48.2	0.008	6.00	0.0	0.600	o	100	Pipe/Conduit		
6.001	9.415	2.092	4.5	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit		
8.000	5.426	0.628	8.6	0.008	6.00	0.0	0.600	o	100	Pipe/Conduit		
6.002	13.754	1.375	10.0	0.009	0.00	0.0	0.600	o	150	Pipe/Conduit		
9.000	6.105	0.082	74.8	0.008	6.00	0.0	0.600	o	100	Pipe/Conduit		
10.000	6.430	0.078	82.6	0.008	6.00	0.0	0.600	o	100	Pipe/Conduit		
Network Results Table												
PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)		
1.002	50.00	6.24	124.143	0.036	0.0	0.0	0.0	1.73	13.6	4.9		
4.000	50.00	6.04	123.888	0.008	0.0	0.0	0.0	1.91	15.0	1.1		
5.000	50.00	6.03	124.479	0.008	0.0	0.0	0.0	2.38	18.7	1.1		
1.003	50.00	6.41	123.544	0.065	0.0	0.0	0.0	1.34	23.6	8.8		
6.000	50.00	6.09	125.700	0.008	0.0	0.0	0.0	1.03	8.1	1.0		
7.000	50.00	6.12	126.236	0.008	0.0	0.0	0.0	1.11	8.7	1.1		
6.001	50.00	6.16	125.599	0.016	0.0	0.0	0.0	3.67	28.8	2.1		
8.000	50.00	6.03	124.135	0.008	0.0	0.0	0.0	2.65	20.8	1.1		
6.002	50.00	6.23	123.457	0.033	0.0	0.0	0.0	3.20	56.6	4.4		
9.000	50.00	6.11	122.888	0.008	0.0	0.0	0.0	0.89	7.0	1.1		
10.000	50.00	6.13	123.394	0.008	0.0	0.0	0.0	0.85	6.7	1.1		
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JBA Consulting		Page 3
The Library St Philips Courtyard Coleshill B46 3AD	Malvern View Park Leisure Detailed Surface Water Drainage Strategy	
Date 04/04/2022 File EHU-JBAU-XX-XX-HM-C-000...	Designed by Adriana Matlak Checked by Luke Virgo	
Micro Drainage		Network 2020.1.3

Network Design Table for Storm2

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
11.000	9.949	0.490	20.3	0.008	6.00	0.0	0.600	o	100	Pipe/Conduit	
6.003	7.439	0.075	99.1	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
12.000	6.276	0.073	86.1	0.008	6.00	0.0	0.600	o	100	Pipe/Conduit	
6.004	7.427	0.074	99.8	0.023	0.00	0.0	0.600	o	150	Pipe/Conduit	
13.000	2.369	0.174	13.6	0.008	6.00	0.0	0.600	o	100	Pipe/Conduit	
13.001	5.897	0.067	88.0	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	
14.000	2.309	0.115	20.0	0.008	6.00	0.0	0.600	o	100	Pipe/Conduit	
14.001	6.659	0.054	123.3	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	
1.004	30.908	0.782	39.5	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
11.000	50.00	6.10	123.428	0.008	0.0	0.0	0.0	1.72	13.5	1.1
6.003	50.00	6.36	122.082	0.057	0.0	0.0	0.0	1.01	17.8	7.7
12.000	50.00	6.13	122.808	0.008	0.0	0.0	0.0	0.83	6.5	1.1
6.004	50.00	6.48	122.007	0.088	0.0	0.0	0.0	1.01	17.8	11.9
13.000	50.00	6.02	123.717	0.008	0.0	0.0	0.0	2.10	16.5	1.1
13.001	50.00	6.14	123.543	0.008	0.0	0.0	0.0	0.82	6.4	1.1
14.000	50.00	6.02	123.527	0.008	0.0	0.0	0.0	1.73	13.6	1.1
14.001	50.00	6.18	123.412	0.008	0.0	0.0	0.0	0.69	5.4	1.1
1.004	50.00	6.80	121.932	0.169	0.0	0.0	0.0	1.61	28.4	22.9

JBA Consulting		Page 4
The Library St Philips Courtyard Coleshill B46 3AD	Malvern View Park Leisure Detailed Surface Water Drainage Strategy	
Date 04/04/2022 File EHU-JBAU-XX-XX-HM-C-000...	Designed by Adriana Matlak Checked by Luke Virgo	
Micro Drainage Network 2020.1.3		

Manhole Schedules for Storm2

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)
JP38	126.464	1.300	Junction		1.000	125.164	100				
J1B	126.698	1.955	Open Manhole	450	1.001	124.742	100	1.000	124.742	100	
JP39	125.669	1.300	Junction		2.000	124.369	100				
JP40	126.374	1.300	Junction		3.000	125.074	100				
IC1B	126.123	1.980	Open Manhole	600	1.002	124.143	100	1.001	124.143	100	
								2.000	124.143	100	
								3.000	124.697	100	554
JP41	125.188	1.300	Junction		4.000	123.888	100				
JP42	125.779	1.300	Junction		5.000	124.479	100				
J2B	125.606	2.062	Open Manhole	450	1.003	123.544	150	1.002	123.594	100	
								4.000	123.594	100	
								5.000	124.049	100	455
JP50	127.000	1.300	Junction		6.000	125.700	100				
JP51	127.689	1.452	Junction		7.000	126.236	100				
J3B	126.822	1.223	Open Manhole	450	6.001	125.599	100	6.000	125.599	100	
								7.000	126.070	100	471
JP49	125.435	1.300	Junction		8.000	124.135	100				
IC2B	125.236	1.779	Open Manhole	600	6.002	123.457	150	6.001	123.507	100	
								8.000	123.507	100	
JP47	124.088	1.201	Junction		9.000	122.888	100				
JP46	124.740	1.346	Junction		10.000	123.394	100				
JP48	124.728	1.300	Junction		11.000	123.428	100				
J4B	124.488	2.406	Open Manhole	450	6.003	122.082	150	6.002	122.082	150	
								9.000	122.806	100	675
								10.000	123.317	100	1185
								11.000	122.938	100	807
JP45	124.108	1.300	Junction		12.000	122.808	100				
MH1B	124.627	2.621	Open Manhole	1200	6.004	122.007	150	6.003	122.007	150	
								12.000	122.735	100	679
JP44	125.081	1.364	Junction		13.000	123.717	100				
PP44	125.025	1.482	Open Manhole	500	13.001	123.543	100	13.000	123.543	100	
JP43	124.827	1.300	Junction		14.000	123.527	100				
PP43	124.982	1.570	Open Manhole	500	14.001	123.412	100	14.000	123.412	100	
MH2B	124.750	2.818	Open Manhole	1200	1.004	121.932	150	1.003	123.308	150	1375
								6.004	121.932	150	
								13.001	123.476	100	1494
								14.001	123.358	100	1375
	122.500	1.350	Open Manhole	0		OUTFALL		1.004	121.150	150	

JBA Consulting		Page 5
The Library St Philips Courtyard Coleshill B46 3AD	Malvern View Park Leisure Detailed Surface Water Drainage Strategy	
Date 04/04/2022 File EHU-JBAU-XX-XX-HM-C-000...	Designed by Adriana Matlak Checked by Luke Virgo	
Micro Drainage	Network 2020.1.3	

Manhole Schedules for Storm2

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
JP38	369909.296	252730.651			No Entry	
J1B	369911.465	252726.436	369911.465	252726.436	Required	
JP39	369923.624	252730.339			No Entry	
JP40	369921.789	252720.803			No Entry	
IC1B	369922.665	252725.968	369922.665	252725.968	Required	
JP41	369933.870	252729.770			No Entry	
JP42	369933.520	252720.344			No Entry	
J2B	369933.593	252724.914	369933.593	252724.914	Required	
JP50	369970.766	252691.651			No Entry	
JP51	369967.520	252685.441			No Entry	
J3B	369965.269	252693.109	369965.269	252693.109	Required	
JP49	369970.079	252702.494			No Entry	
IC2B	369964.654	252702.504	369964.654	252702.504	Required	
JP47	369963.801	252719.277			No Entry	
JP46	369955.028	252710.349			No Entry	

JBA Consulting		Page 6
The Library St Philips Courtyard Colleshill B46 3AD	Malvern View Park Leisure Detailed Surface Water Drainage Strategy	
Date 04/04/2022 File EHU-JBAU-XX-XX-HM-C-000...	Designed by Adriana Matlak Checked by Luke Virgo	
Micro Drainage	Network 2020.1.3	

Manhole Schedules for Storm2

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
JP48	369966.793	252708.638			No Entry	
J4B	369959.286	252715.167	369959.286	252715.167	Required	
JP45	369956.556	252724.792			No Entry	
MH1B	369953.221	252719.475	369953.221	252719.475	Required	
JP44	369943.788	252715.757			No Entry	
PP44	369944.677	252717.953	369944.677	252717.953	Required	
JP43	369939.194	252727.955			No Entry	
PP43	369941.130	252726.697	369941.130	252726.697	Required	
MH2B	369946.919	252723.406	369946.919	252723.406	Required	
	369956.283	252752.862			No Entry	

JBA Consulting	Page 7
The Library St Philips Courtyard Colleshill B46 3AD	Malvern View Park Leisure Detailed Surface Water Drainage Strategy
Date 04/04/2022 File EHU-JBAU-XX-XX-HM-C-000...	Designed by Adriana Matlak Checked by Luke Virgo
Micro Drainage	Network 2020.1.3



PIPELINE SCHEDULES for Storm2

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	100	JP38	126.464	125.164	1.200	Junction	
1.001	o	100	J1B	126.698	124.742	1.855	Open Manhole	450
2.000	o	100	JP39	125.669	124.369	1.200	Junction	
3.000	o	100	JP40	126.374	125.074	1.200	Junction	
1.002	o	100	IC1B	126.123	124.143	1.880	Open Manhole	600
4.000	o	100	JP41	125.188	123.888	1.200	Junction	
5.000	o	100	JP42	125.779	124.479	1.200	Junction	
1.003	o	150	J2B	125.606	123.544	1.912	Open Manhole	450
6.000	o	100	JP50	127.000	125.700	1.200	Junction	
7.000	o	100	JP51	127.689	126.236	1.352	Junction	
6.001	o	100	J3B	126.822	125.599	1.123	Open Manhole	450

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	4.741	11.2	J1B	126.698	124.742	1.855	Open Manhole	450
1.001	11.210	18.7	IC1B	126.123	124.143	1.880	Open Manhole	600
2.000	4.475	19.8	IC1B	126.123	124.143	1.880	Open Manhole	600
3.000	5.239	13.9	IC1B	126.123	124.697	1.326	Open Manhole	600
1.002	10.979	20.0	J2B	125.606	123.594	1.912	Open Manhole	450
4.000	4.864	16.5	J2B	125.606	123.594	1.912	Open Manhole	450
5.000	4.570	10.6	J2B	125.606	124.049	1.457	Open Manhole	450
1.003	13.411	56.7	MH2B	124.750	123.308	1.292	Open Manhole	1200
6.000	5.687	56.3	J3B	126.822	125.599	1.123	Open Manhole	450
7.000	7.992	48.2	J3B	126.822	126.070	0.651	Open Manhole	450
6.001	9.415	4.5	IC2B	125.236	123.507	1.629	Open Manhole	600

JBA Consulting		Page 8
The Library St Philips Courtyard Colleshill B46 3AD	Malvern View Park Leisure Detailed Surface Water Drainage Strategy	
Date 04/04/2022 File EHU-JBAU-XX-XX-HM-C-000...	Designed by Adriana Matlak Checked by Luke Virgo	
Micro Drainage	Network 2020.1.3	

PIPELINE SCHEDULES for Storm2

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)
8.000	o	100	JP49	125.435	124.135	1.200	Junction	
6.002	o	150	IC2B	125.236	123.457	1.629	Open Manhole	600
9.000	o	100	JP47	124.088	122.888	1.101	Junction	
10.000	o	100	JP46	124.740	123.394	1.246	Junction	
11.000	o	100	JP48	124.728	123.428	1.200	Junction	
6.003	o	150	J4B	124.488	122.082	2.256	Open Manhole	450
12.000	o	100	JP45	124.108	122.808	1.200	Junction	
6.004	o	150	MH1B	124.627	122.007	2.471	Open Manhole	1200
13.000	o	100	JP44	125.081	123.717	1.264	Junction	
13.001	o	100	PP44	125.025	123.543	1.382	Open Manhole	500
14.000	o	100	JP43	124.827	123.527	1.200	Junction	
14.001	o	100	PP43	124.982	123.412	1.470	Open Manhole	500

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)
8.000	5.426	8.6	IC2B	125.236	123.507	1.629	Open Manhole	600
6.002	13.754	10.0	J4B	124.488	122.082	2.256	Open Manhole	450
9.000	6.105	74.8	J4B	124.488	122.806	1.581	Open Manhole	450
10.000	6.430	82.6	J4B	124.488	123.317	1.071	Open Manhole	450
11.000	9.949	20.3	J4B	124.488	122.938	1.449	Open Manhole	450
6.003	7.439	99.1	MH1B	124.627	122.007	2.471	Open Manhole	1200
12.000	6.276	86.1	MH1B	124.627	122.735	1.792	Open Manhole	1200
6.004	7.427	99.8	MH2B	124.750	121.932	2.668	Open Manhole	1200
13.000	2.369	13.6	PP44	125.025	123.543	1.382	Open Manhole	500
13.001	5.897	88.0	MH2B	124.750	123.476	1.174	Open Manhole	1200
14.000	2.309	20.0	PP43	124.982	123.412	1.470	Open Manhole	500
14.001	6.659	123.3	MH2B	124.750	123.358	1.292	Open Manhole	1200

JBA Consulting		Page 9
The Library St Philips Courtyard Colleshill B46 3AD		Malvern View Park Leisure Detailed Surface Water Drainage Strategy
Date 04/04/2022 File EHU-JBAU-XX-XX-HM-C-000...		Designed by Adriana Matlak Checked by Luke Virgo
Micro Drainage		Network 2020.1.3

JBA Consulting		Page 10
The Library St Philips Courtyard Coleshill B46 3AD	Malvern View Park Leisure Detailed Surface Water Drainage Strategy	
Date 04/04/2022 File EHU-JBAU-XX-XX-HM-C-000...	Designed by Adriana Matlak Checked by Luke Virgo	
Micro Drainage	Network 2020.1.3	
Synthetic Rainfall Details Cv (Summer) 0.800 Cv (Winter) 0.840 Storm Duration (mins) 30		
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JBA Consulting		Page 11
The Library St Philips Courtyard Colleshill B46 3AD	Malvern View Park Leisure Detailed Surface Water Drainage Strategy	
Date 04/04/2022 File EHU-JBAU-XX-XX-HM-C-000...	Designed by Adriana Matlak Checked by Luke Virgo	
Micro Drainage	Network 2020.1.3	
<u>Online Controls for Storm2</u> <u>Complex Manhole: J2B, DS/PN: 1.003, Volume (m³): 0.5</u> <u>Orifice</u> Diameter (m) 0.025 Discharge Coefficient 0.600 Invert Level (m) 123.544 <u>Weir</u> Discharge Coef 0.590 Width (m) 1.884 Invert Level (m) 125.476 <u>Complex Manhole: MH1B, DS/PN: 6.004, Volume (m³): 3.1</u> <u>Orifice</u> Diameter (m) 0.040 Discharge Coefficient 0.600 Invert Level (m) 122.007 <u>Weir</u> Discharge Coef 0.590 Width (m) 1.884 Invert Level (m) 124.497 <u>Complex Manhole: PP44, DS/PN: 13.001, Volume (m³): 0.3</u> <u>Orifice</u> Diameter (m) 0.015 Discharge Coefficient 0.600 Invert Level (m) 123.543 <u>Weir</u> Discharge Coef 0.590 Width (m) 0.314 Invert Level (m) 124.895 <u>Complex Manhole: PP43, DS/PN: 14.001, Volume (m³): 0.3</u> <u>Orifice</u> Diameter (m) 0.015 Discharge Coefficient 0.600 Invert Level (m) 123.412 <u>Weir</u> Discharge Coef 0.590 Width (m) 0.314 Invert Level (m) 124.852		
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JBA Consulting		Page 12
The Library St Philips Courtyard Colleshill B46 3AD	Malvern View Park Leisure Detailed Surface Water Drainage Strategy	
Date 04/04/2022 File EHU-JBAU-XX-XX-HM-C-000...	Designed by Adriana Matlak Checked by Luke Virgo	
Micro Drainage	Network 2020.1.3	

Hydro-Brake® Optimum Manhole: MH2B, DS/PN: 1.004, Volume (m³): 3.6

Unit Reference	MD-SHE-0054-2000-2400-2000
Design Head (m)	2.400
Design Flow (l/s)	2.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	54
Invert Level (m)	121.932
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.400	2.0
Flush-Flo™	0.242	1.2
Kick-Flo®	0.488	1.0
Mean Flow over Head Range	-	1.4

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)
0.100	1.1	1.200	1.5	3.000	2.2	7.000	3.3
0.200	1.2	1.400	1.6	3.500	2.4	7.500	3.4
0.300	1.2	1.600	1.7	4.000	2.5	8.000	3.5
0.400	1.1	1.800	1.8	4.500	2.7	8.500	3.6
0.500	1.0	2.000	1.8	5.000	2.8	9.000	3.7
0.600	1.1	2.200	1.9	5.500	2.9	9.500	3.8
0.800	1.2	2.400	2.0	6.000	3.1		
1.000	1.3	2.600	2.1	6.500	3.2		

JBA Consulting		Page 13
The Library St Philips Courtyard Colleshill B46 3AD	Malvern View Park Leisure Detailed Surface Water Drainage Strategy	
Date 04/04/2022 File EHU-JBAU-XX-XX-HM-C-000...	Designed by Adriana Matlak Checked by Luke Virgo	
Micro Drainage	Network 2020.1.3	

Storage Structures for Storm2

Porous Car Park Manhole: J2B, DS/PN: 1.003

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.5
Membrane Percolation (mm/hr)	1000	Length (m)	18.0
Max Percolation (l/s)	27.5	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.95	Evaporation (mm/day)	3
Invert Level (m)	125.026	Cap Volume Depth (m)	0.450

Porous Car Park Manhole: MH1B, DS/PN: 6.004

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.5
Membrane Percolation (mm/hr)	1000	Length (m)	18.0
Max Percolation (l/s)	27.5	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.95	Evaporation (mm/day)	3
Invert Level (m)	124.047	Cap Volume Depth (m)	0.450

Porous Car Park Manhole: PP44, DS/PN: 13.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	1.5
Membrane Percolation (mm/hr)	1000	Length (m)	3.0
Max Percolation (l/s)	1.3	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.95	Evaporation (mm/day)	3
Invert Level (m)	124.445	Cap Volume Depth (m)	0.450

Porous Car Park Manhole: PP43, DS/PN: 14.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	1.5
Membrane Percolation (mm/hr)	1000	Length (m)	3.0
Max Percolation (l/s)	1.3	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.95	Evaporation (mm/day)	3
Invert Level (m)	124.402	Cap Volume Depth (m)	0.450

JBA Consulting		Page 14
The Library St Philips Courtyard Coleshill B46 3AD	Malvern View Park Leisure Detailed Surface Water Drainage Strategy	
Date 04/04/2022 File EHU-JBAU-XX-XX-HM-C-000...	Designed by Adriana Matlak Checked by Luke Virgo	
Micro Drainage	Network 2020.1.3	

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm2

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 4
 Number of Online Controls 5 Number of Time/Area Diagrams 0
 Number of Offline Controls 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH
 FEH Rainfall Version 1999
 Site Location GB 370200 252250 SO 70200 52250
 C (1km) -0.027
 D1 (1km) 0.358
 D2 (1km) 0.391
 D3 (1km) 0.280
 E (1km) 0.300
 F (1km) 2.381
 Cv (Summer) 0.800
 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600,
 720, 960, 1440, 2160, 2880, 4320, 5760,
 7200, 8640, 10080
 Return Period(s) (years) 2, 30, 100
 Climate Change (%) 0, 0, 40

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap.
1.000	JP38	15 minute 2 year Winter I+0%	126.464	125.180	-0.084	0.000	0.06
1.001	J1B	60 minute 2 year Winter I+0%	126.698	124.941	0.099	0.000	0.11
2.000	JP39	15 minute 2 year Summer I+0%	125.669	124.469	0.000	0.000	0.07
3.000	JP40	15 minute 2 year Winter I+0%	126.374	125.090	-0.083	0.000	0.07
1.002	IC1B	60 minute 2 year Winter I+0%	126.123	124.937	0.694	0.000	0.14
4.000	JP41	15 minute 2 year Summer I+0%	125.188	123.988	0.000	0.000	0.04
5.000	JP42	15 minute 2 year Summer I+0%	125.779	124.579	0.000	0.000	0.06
1.003	J2B	60 minute 2 year Winter I+0%	125.606	124.930	1.236	0.000	0.07
6.000	JP50	15 minute 2 year Winter I+0%	127.000	125.724	-0.076	0.000	0.13

JBA Consulting		Page 15
The Library St Philips Courtyard Coleshill B46 3AD	Malvern View Park Leisure Detailed Surface Water Drainage Strategy	
Date 04/04/2022 File EHU-JBAU-XX-XX-HM-C-000...	Designed by Adriana Matlak Checked by Luke Virgo	
Micro Drainage	Network 2020.1.3	

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm2

		US/MH		Overflow	Discharge	Pipe		
PN	Name			(l/s)	Vol (m³)	(l/s)	Status	
1.000	JP38				0.569	1.1	OK*	
1.001	J1B				2.252	1.5	SURCHARGED	
2.000	JP39				0.529	1.0	SURCHARGED*	
3.000	JP40				0.556	1.1	OK*	
1.002	IC1B				4.029	1.7	SURCHARGED	
4.000	JP41				0.538	0.7	SURCHARGED*	
5.000	JP42				0.532	1.1	SURCHARGED*	
1.003	J2B				6.783	1.5	SURCHARGED	
6.000	JP50				0.542	1.1	OK*	

JBA Consulting		Page 16
The Library St Philips Courtyard Colleshill B46 3AD	Malvern View Park Leisure Detailed Surface Water Drainage Strategy	
Date 04/04/2022 File EHU-JBAU-XX-XX-HM-C-000...	Designed by Adriana Matlak Checked by Luke Virgo	
Micro Drainage Network 2020.1.3		

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm2

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
7.000	JP51	15 minute 2 year Winter I+0%	127.689	126.260	-0.077	0.000	0.12
6.001	J3B	15 minute 2 year Winter I+0%	126.822	125.618	-0.081	0.000	0.08
8.000	JP49	15 minute 2 year Winter I+0%	125.435	124.150	-0.085	0.000	0.05
6.002	IC2B	240 minute 2 year Winter I+0%	125.236	124.001	0.394	0.000	0.02
9.000	JP47	15 minute 2 year Summer I+0%	124.088	122.988	0.000	0.000	0.15
10.000	JP46	960 minute 2 year Winter I+0%	124.740	123.494	0.000	0.000	0.02
11.000	JP48	960 minute 2 year Summer I+0%	124.728	123.528	0.000	0.000	0.01
6.003	J4B	240 minute 2 year Winter I+0%	124.488	124.000	1.768	0.000	0.07
12.000	JP45	15 minute 2 year Summer I+0%	124.108	122.908	0.000	0.000	0.16
6.004	MH1B	240 minute 2 year Winter I+0%	124.627	123.999	1.842	0.000	0.08
13.000	JP44	15 minute 2 year Summer I+0%	125.081	123.817	0.000	0.000	0.04
13.001	PP44	30 minute 2 year Winter I+0%	125.025	123.958	0.315	0.000	0.05
14.000	JP43	15 minute 2 year Summer I+0%	124.827	123.627	0.000	0.000	0.04
14.001	PP43	240 minute 2 year Winter I+0%	124.982	123.951	0.439	0.000	0.04
1.004	MH2B	240 minute 2 year Winter I+0%	124.750	123.932	1.850	0.000	0.07

PN	US/MH Name	Overflow (l/s)	Discharge Vol (m³)	Pipe Flow (l/s)	Status
7.000	JP51		0.550	1.1	OK*
6.001	J3B		1.092	2.2	OK
8.000	JP49		0.555	1.1	OK*
6.002	IC2B		5.828	1.0	SURCHARGED
9.000	JP47		0.011	1.1	SURCHARGED*
10.000	JP46		2.416	0.1	SURCHARGED*
11.000	JP48		2.257	0.2	SURCHARGED*
6.003	J4B		10.217	1.1	SURCHARGED
12.000	JP45		-0.072	1.0	SURCHARGED*
6.004	MH1B		15.272	1.2	SURCHARGED
13.000	JP44		0.540	0.5	SURCHARGED*
13.001	PP44		0.694	0.3	SURCHARGED
14.000	JP43		0.535	0.4	SURCHARGED*
14.001	PP43		1.438	0.2	SURCHARGED
1.004	MH2B		29.308	1.8	SURCHARGED

JBA Consulting		Page 18
The Library St Philips Courtyard Coleshill B46 3AD	Malvern View Park Leisure Detailed Surface Water Drainage Strategy	
Date 04/04/2022 File EHU-JBAU-XX-XX-HM-C-000...	Designed by Adriana Matlak Checked by Luke Virgo	
Micro Drainage		Network 2020.1.3

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm2

US/MH			Pipe		Status
PN	Name	Overflow Discharge (l/s) Vol (m³)	Flow (l/s)		
1.000	JP38	1.344	2.5	SURCHARGED*	
1.001	J1B	3.374	5.5	SURCHARGED	
2.000	JP39	0.534	2.0	SURCHARGED*	
3.000	JP40	1.312	2.4	SURCHARGED*	
1.002	IC1B	4.942	8.4	SURCHARGED	
4.000	JP41	-0.001	2.9	SURCHARGED*	
5.000	JP42	0.668	2.8	SURCHARGED*	
1.003	J2B	8.628	1.6	SURCHARGED	
6.000	JP50	1.344	2.7	OK*	

JBA Consulting		Page 19
The Library St Philips Courtyard Colleshill B46 3AD	Malvern View Park Leisure Detailed Surface Water Drainage Strategy	
Date 04/04/2022 File EHU-JBAU-XX-XX-HM-C-000...	Designed by Adriana Matlak Checked by Luke Virgo	
Micro Drainage	Network 2020.1.3	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm2

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
7.000	JP51	15 minute 30 year Winter I+0%	127.689	126.274	-0.062	0.000	0.31
6.001	J3B	15 minute 30 year Winter I+0%	126.822	125.629	-0.070	0.000	0.20
8.000	JP49	360 minute 30 year Winter I+0%	125.435	124.216	-0.019	0.000	0.02
6.002	IC2B	360 minute 30 year Winter I+0%	125.236	124.216	0.608	0.000	0.03
9.000	JP47	15 minute 30 year Summer I+0%	124.088	122.988	0.000	0.000	0.28
10.000	JP46	15 minute 30 year Summer I+0%	124.740	123.494	0.000	0.000	0.32
11.000	JP48	15 minute 30 year Summer I+0%	124.728	123.528	0.000	0.000	0.15
6.003	J4B	360 minute 30 year Winter I+0%	124.488	124.215	1.983	0.000	0.17
12.000	JP45	15 minute 30 year Summer I+0%	124.108	122.908	0.000	0.000	0.34
6.004	MH1B	360 minute 30 year Winter I+0%	124.627	124.214	2.057	0.000	0.11
13.000	JP44	15 minute 30 year Summer I+0%	125.081	123.817	0.000	0.000	0.06
13.001	PP44	60 minute 30 year Winter I+0%	125.025	124.477	0.834	0.000	0.06
14.000	JP43	15 minute 30 year Summer I+0%	124.827	123.627	0.000	0.000	0.07
14.001	PP43	120 minute 30 year Winter I+0%	124.982	124.416	0.905	0.000	0.05
1.004	MH2B	240 minute 30 year Winter I+0%	124.750	124.167	2.085	0.000	0.07

PN	US/MH Name	Overflow (l/s)	Discharge Vol (m³)	Pipe Flow (l/s)	Status
7.000	JP51		1.363	2.7	OK*
6.001	J3B		2.707	5.4	OK
8.000	JP49		3.213	0.4	OK*
6.002	IC2B		13.164	1.5	SURCHARGED
9.000	JP47		-0.067	2.0	SURCHARGED*
10.000	JP46		0.595	2.1	SURCHARGED*
11.000	JP48		0.607	2.1	SURCHARGED*
6.003	J4B		23.076	2.5	FLOOD RISK
12.000	JP45		-0.139	2.2	SURCHARGED*
6.004	MH1B		35.115	1.7	SURCHARGED
13.000	JP44		0.914	0.7	SURCHARGED*
13.001	PP44		1.454	0.3	SURCHARGED
14.000	JP43		0.726	0.7	SURCHARGED*
14.001	PP43		1.628	0.2	SURCHARGED
1.004	MH2B		49.258	1.9	SURCHARGED

JBA Consulting		Page 21
The Library St Philips Courtyard Coleshill B46 3AD	Malvern View Park Leisure Detailed Surface Water Drainage Strategy	
Date 04/04/2022 File EHU-JBAU-XX-XX-HM-C-000...	Designed by Adriana Matlak Checked by Luke Virgo	
Micro Drainage		Network 2020.1.3

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm2

US/MH			Pipe		Status
PN	Name	Overflow Discharge (l/s) Vol (m³)	Flow (l/s)		
1.000	JP38	2.834	5.1	SURCHARGED*	
1.001	J1B	7.190	9.9	SURCHARGED	
2.000	JP39	1.848	3.8	SURCHARGED*	
3.000	JP40	2.669	3.8	SURCHARGED*	
1.002	IC1B	11.510	15.9	FLOOD RISK	
4.000	JP41	1.336	5.4	SURCHARGED*	
5.000	JP42	1.989	5.3	SURCHARGED*	
1.003	J2B	24.922	1.4	SURCHARGED	
6.000	JP50	2.835	5.6	OK*	

JBA Consulting		Page 22
The Library St Philips Courtyard Colleshill B46 3AD	Malvern View Park Leisure Detailed Surface Water Drainage Strategy	
Date 04/04/2022 File EHU-JBAU-XX-XX-HM-C-000...	Designed by Adriana Matlak Checked by Luke Virgo	
Micro Drainage	Network 2020.1.3	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm2

				Water		Surcharged	Flooded		
PN	US/MH Name	Event		US/CL (m)	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	
7.000	JP51	15 minute	100 year Winter I+40%	127.689	126.295	-0.041	0.000	0.65	
6.001	J3B	15 minute	100 year Winter I+40%	126.822	125.644	-0.055	0.000	0.42	
8.000	JP49	15 minute	100 year Summer I+40%	125.435	124.235	0.000	0.000	0.27	
6.002	IC2B	15 minute	100 year Winter I+40%	125.236	124.712	1.105	0.000	0.40	
9.000	JP47	15 minute	100 year Summer I+40%	124.088	122.988	0.000	0.000	0.70	
10.000	JP46	15 minute	100 year Summer I+40%	124.740	123.494	0.000	0.000	0.77	
11.000	JP48	15 minute	100 year Summer I+40%	124.728	123.528	0.000	0.000	0.37	
6.003	J4B	480 minute	100 year Winter I+40%	124.488	124.493	2.261	5.080	0.25	
12.000	JP45	15 minute	100 year Summer I+40%	124.108	122.908	0.000	0.000	0.86	
6.004	MH1B	480 minute	100 year Winter I+40%	124.627	124.492	2.335	0.000	0.11	
13.000	JP44	15 minute	100 year Summer I+40%	125.081	123.817	0.000	0.000	0.43	
13.001	PP44	60 minute	100 year Winter I+40%	125.025	124.810	1.167	0.000	0.06	
14.000	JP43	15 minute	100 year Summer I+40%	124.827	123.627	0.000	0.000	0.48	
14.001	PP43	120 minute	100 year Winter I+40%	124.982	124.751	1.240	0.000	0.06	
1.004	MH2B	240 minute	100 year Winter I+40%	124.750	124.450	2.367	0.000	0.07	

				Pipe		
PN	US/MH Name	Overflow (l/s)	Discharge Vol (m³)	Flow (l/s)	Status	
7.000	JP51		2.876	5.7	OK*	
6.001	J3B		5.711	11.3	OK	
8.000	JP49		2.653	5.7	SURCHARGED*	
6.002	IC2B		11.388	20.5	SURCHARGED	
9.000	JP47		1.203	4.9	SURCHARGED*	
10.000	JP46		1.939	5.1	SURCHARGED*	
11.000	JP48		1.921	5.0	SURCHARGED*	
6.003	J4B		42.202	3.8	FLOOD	
12.000	JP45		1.140	5.6	SURCHARGED*	
6.004	MH1B		44.242	1.8	FLOOD RISK	
13.000	JP44		1.847	5.0	SURCHARGED*	
13.001	PP44		2.009	0.3	FLOOD RISK	
14.000	JP43		1.675	4.5	SURCHARGED*	
14.001	PP43		3.113	0.3	FLOOD RISK	
1.004	MH2B		53.973	2.0	SURCHARGED	