

Arun Crematorium

Design Calculations

13591 - Proposed Surface Water Network

13591-CRH-XX-XX-CA-C-0007

Rev P2

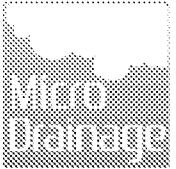
Date: 04/05/22

Project No: 13591

Engineer: J. Adams

Checked: A. Higgins

Campbell Reith Hill LLP
Raven House
29 Linkfield Lane
Redhill

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Raven House 29 Linkfield Lane Surrey RH1 1SS	13591-Arun Crem Proposed SW Network Rev P2	
Date 04/05/2022 File 13591-CRH-XX-XX-CA-C-0007-P2_...	Designed by JA Checked by AJH	
XP Solutions	Network 2020.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model	
Return Period (years)	100
FEH Rainfall Version	1999
Site Location GB 498000 101400 SU 98000 01400	
C (1km)	-0.026
D1 (1km)	0.390
D2 (1km)	0.244
D3 (1km)	0.410
E (1km)	0.311
F (1km)	2.320
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

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.411	4-8	0.163

Total Area Contributing (ha) = 0.574

Total Pipe Volume (m³) = 359.682

Network Design Table for Storm

- Indicates pipe length does not match coordinates

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	31.570	0.450	70.2	0.073	4.00	0.0	0.600		o	225	Pipe/Conduit	
1.001	40.605	0.370	109.7	0.006	0.00	0.0	0.600		o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	E I.Area (ha)	E Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	4.34	4.150	0.073	0.0	0.0	0.0	1.56	62.2	9.9
1.001	50.00	4.88	3.700	0.079	0.0	0.0	0.0	1.25	49.6	10.7

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Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
1.002	18.245	0.210	86.9	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	🔧
2.000	40.430	0.400	101.1	0.067	4.00	0.0	0.600		o	225	Pipe/Conduit	🔧
3.000	17.120	0.290	59.0	0.009	4.00	0.0	0.600		o	225	Pipe/Conduit	🔧
2.001	8.720	0.180	48.4	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	🔧
1.003	32.050	0.320	100.2	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	🔧
1.004	19.980	0.200	99.5	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	🔧
4.000	5.500	0.050	110.0	0.045	4.00	0.0	0.600		o	150	Pipe/Conduit	🔧
5.000	24.900	0.550	45.3	0.006	4.00	0.0		0.045 4 \=/	500	1:4 Swale	🔧	
6.000	7.040	0.130	54.2	0.020	4.00	0.0	0.600		o	150	Pipe/Conduit	🔧
7.000	8.390	0.180	46.6	0.018	4.00	0.0	0.600		o	150	Pipe/Conduit	🔧
5.001	38.945	0.380	102.5	0.000	0.00	0.0		0.045 4 \=/	500	1:4 Swale	🔧	
8.000	7.220	0.105	68.8	0.027	4.00	0.0	0.600		o	150	Pipe/Conduit	🔧
9.000	8.270	0.055	150.4	0.025	4.00	0.0	0.600		o	150	Pipe/Conduit	🔧
5.002	9.841	0.100	98.4	0.021	0.00	0.0	0.600		o	225	Pipe/Conduit	🔧

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	E I.Area (ha)	E Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.002	50.00	5.10	3.330	0.079	0.0	0.0	0.0	1.40	55.8	10.7
2.000	50.00	4.52	3.700	0.067	0.0	0.0	0.0	1.30	51.7	9.1
3.000	50.00	4.17	3.590	0.009	0.0	0.0	0.0	1.71	67.8	1.2
2.001	50.00	4.60	3.390	0.076	0.0	0.0	0.0	1.88	74.9	10.3
1.003	50.00	5.50	3.120	0.155	0.0	0.0	0.0	1.31	51.9	21.0
1.004	50.00	5.76	2.800	0.155	0.0	0.0	0.0	1.31	52.1	21.0
4.000	50.00	4.10	3.550	0.045	0.0	0.0	0.0	0.96	16.9	6.1
5.000	50.00	4.60	3.800	0.006	0.0	0.0	0.0	0.69	113.5	0.8
6.000	50.00	4.09	3.450	0.020	0.0	0.0	0.0	1.37	24.2	2.7
7.000	50.00	4.09	3.590	0.018	0.0	0.0	0.0	1.48	26.1	2.4
5.001	50.00	6.02	3.250	0.044	0.0	0.0	0.0	0.46	75.4	6.0
8.000	50.00	4.10	3.950	0.027	0.0	0.0	0.0	1.21	21.5	3.7
9.000	50.00	4.17	3.900	0.025	0.0	0.0	0.0	0.92	14.4	3.4
5.002	50.00	6.15	2.870	0.117	0.0	0.0	0.0	1.32	52.4	15.8

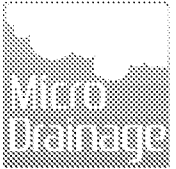
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XP Solutions	Network 2020.1	

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
10.000	8.690	0.155	56.1	0.006	4.00	0.0	0.600		o	150	Pipe/Conduit	
5.003	19.900	0.170	117.1	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
11.000	5.000	0.130	38.5	0.018	4.00	0.0	0.600		o	150	Pipe/Conduit	
11.001	7.000	0.050	140.0	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
12.000	5.000	0.010	500.0	0.042	4.00	0.0	0.600		o	150	Pipe/Conduit	
13.000	5.000	0.020	250.0	0.010	4.00	0.0	0.600		o	150	Pipe/Conduit	
12.001	7.000	0.050	140.0	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
14.000	10.260	0.130	78.9	0.025	4.00	0.0	0.600		o	150	Pipe/Conduit	
14.001	6.320	0.020	316.0	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
14.002	14.190	0.150	94.6	0.012	0.00	0.0		0.045 4 \=/		500	1:4 Swale	
15.000	7.735	0.040	193.4	0.020	4.00	0.0	0.600		o	150	Pipe/Conduit	
14.003	24.460	0.250	97.8	0.000	0.00	0.0		0.045 4 \=/		500	1:4 Swale	
16.000	19.620	0.200	98.1	0.053	4.00	0.0	0.600		o	225	Pipe/Conduit	
16.001	20.520	0.200	102.6	0.011	0.00	0.0	0.600		o	225	Pipe/Conduit	
16.002	8.180	0.250	32.7	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	I.Area (ha)	Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
10.000	50.00	4.11	3.000	0.006	0.0	0.0	0.0	1.35	23.8	0.8
5.003	50.00	6.42	2.770	0.123	0.0	0.0	0.0	1.21	48.0	16.7
11.000	50.00	4.05	3.630	0.018	0.0	0.0	0.0	1.63	28.8	2.4
11.001	50.00	4.19	3.500	0.018	0.0	0.0	0.0	0.85	15.0	2.4
12.000	50.00	4.19	2.910	0.042	0.0	0.0	0.0	0.44	7.8	5.7
13.000	50.00	4.13	2.920	0.010	0.0	0.0	0.0	0.63	11.2	1.4
12.001	50.00	4.33	2.900	0.052	0.0	0.0	0.0	0.85	15.0	7.0
14.000	50.00	4.15	3.800	0.025	0.0	0.0	0.0	1.13	20.0	3.4
14.001	50.00	4.34	3.670	0.025	0.0	0.0	0.0	0.56	9.9	3.4
14.002	50.00	4.84	3.650	0.037	0.0	0.0	0.0	0.48	78.5	5.0
15.000	50.00	4.18	3.540	0.020	0.0	0.0	0.0	0.72	12.7	2.7
14.003	50.00	5.71	3.580	0.057	0.0	0.0	0.0	0.47	77.2	7.7
16.000	50.00	4.25	3.900	0.053	0.0	0.0	0.0	1.32	52.5	7.2
16.001	50.00	4.51	3.700	0.064	0.0	0.0	0.0	1.29	51.3	8.7
16.002	50.00	4.57	3.500	0.064	0.0	0.0	0.0	2.30	91.3	8.7

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PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
14.004	14.690	0.335	43.9	0.000	0.00	0.0		0.045	4 \=/	225	1:4 Swale	
17.000	7.765	0.105	74.0	0.030	4.00	0.0	0.600		o	150	Pipe/Conduit	
14.005	32.200	0.320	100.6	0.030	0.00	0.0	0.600		o	225	Pipe/Conduit	
18.000	18.900	0.280	71.1	0.000	4.00	0.1	0.600		o	150	Pipe/Conduit	
1.005	6.395	0.600	10.7	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
1.006	5.370	0.500	10.7	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	

Network Results Table

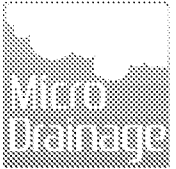
PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
14.004	50.00	6.09	3.250	0.121	0.0	0.0	0.0	0.65	80.1	16.4
17.000	50.00	4.11	3.100	0.030	0.0	0.0	0.0	1.17	20.7	4.1
14.005	50.00	6.50	2.920	0.181	0.0	0.0	0.0	1.30	51.8	24.5
18.000	50.00	4.28	2.880	0.000	0.1	0.0	0.0	1.19	21.1	0.1
1.005	50.00	6.53	2.600	0.574	0.1	0.0	0.0	3.10	54.9	77.8
1.006	50.00	6.56	2.000	0.574	0.1	0.0	0.0	3.09	54.6	77.8

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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)
SW1	4.850	0.700	Open Manhole	600	1.000	4.150	225				
SW2	4.500	0.800	Open Manhole	600	1.001	3.700	225	1.000	3.700	225	
SW3	4.500	1.170	Open Manhole	600	1.002	3.330	225	1.001	3.330	225	
SW18	4.700	1.000	Open Manhole	600	2.000	3.700	225				
SW20	4.700	1.110	Open Manhole	600	3.000	3.590	225				
SW19	4.700	1.400	Open Manhole	600	2.001	3.300	225	2.000	3.300	225	
								3.000	3.300	225	
SW4	4.500	1.380	Open Manhole	600	1.003	3.120	225	1.002	3.120	225	
								2.001	3.120	225	
SW5	4.000	1.200	Open Manhole	600	1.004	2.800	225	1.003	2.800	225	
SW14	4.350	0.800	Open Manhole	600	4.000	3.550	150				
Gabion HW	4.500	0.700	Open Manhole	600	5.000	3.800	500				
RE5	3.950	0.500	Open Manhole	600	6.000	3.450	150				
RE2	4.050	0.550	Open Manhole	600	7.000	3.500	150				
SW6	3.970	0.720	Open Manhole	600	5.001	3.250	500	5.000	3.250	500	70
								6.000	3.320	150	
								7.000	3.320	150	70
RE6	3.550	0.500	Open Manhole	600	8.000	3.050	150				
RE3	3.550	0.550	Open Manhole	600	9.000	3.000	150				
SW7	3.600	0.730	Open Manhole	600	5.002	2.870	225	5.001	2.870	500	
								8.000	2.945	150	
								9.000	2.945	150	
RE4	3.600	0.600	Open Manhole	600	10.000	3.000	150				
SW8	4.050	1.280	Open Manhole	600	5.003	2.770	225	5.002	2.770	225	
								10.000	2.845	150	
Perm Pav 1	4.050	0.420	Open Manhole	600	11.000	3.630	150				
RE1	4.050	0.550	Open Manhole	600	11.001	3.500	150	11.000	3.500	150	
Perm Pav 15a	3.350	0.440	Open Manhole	600	12.000	2.910	150				
Perm Pav 15b	3.350	0.430	Open Manhole	600	13.000	2.920	150				
SW15	3.450	0.550	Open Manhole	600	12.001	2.900	150	12.000	2.900	150	
								13.000	2.900	150	
SW16	4.800	1.000	Open Manhole	600	14.000	3.800	150				
SW17	4.500	0.830	Open Manhole	600	14.001	3.670	150	14.000	3.670	150	
Swale	4.500	0.850	Open Manhole	600	14.002	3.650	500	14.001	3.650	150	
RE7	4.050	0.510	Open Manhole	600	15.000	3.540	150				
SW9	4.150	0.650	Open Manhole	600	14.003	3.500	500	14.002	3.500	500	
								15.000	3.500	150	
SW11	4.750	0.850	Open Manhole	600	16.000	3.800	225				
SW12	4.700	1.000	Open Manhole	600	16.001	3.700	225	16.000	3.700	225	
SW13	4.500	1.000	Open Manhole	600	16.002	3.500	225	16.001	3.500	225	
Swale	4.500	1.250	Open Manhole	600	14.004	3.250	225	14.003	3.250	500	
								16.002	3.250	225	
RE8	3.600	0.500	Open Manhole	600	17.000	3.100	150				
SW10	4.100	1.185	Open Manhole	600	14.005	2.920	225	14.004	2.915	225	

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Manhole Schedules for Storm

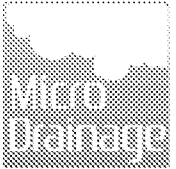
MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
FW5	4.300	1.420	Open Manhole	600	18.000	2.880	150	17.000	2.995	150	
Gabion HW	4.200	1.600	Open Manhole	600	1.005	2.600	150	1.004	2.600	225	
								4.000	3.500	150	900
								5.003	2.600	225	
								11.001	3.450	150	850
								12.001	2.850	150	250
								14.005	2.600	225	
								18.000	2.600	150	
SW20	4.000	2.000	Open Manhole	1200	1.006	2.000	150	1.005	2.000	150	
Outfall	4.000	2.500	Open Manhole	0		OUTFALL		1.006	1.500	150	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW1	497992.607	101768.526	497992.607	101768.526	Required	●
SW2	498022.043	101779.935	498022.043	101779.935	Required	●
SW3	498036.717	101742.074	498036.717	101742.074	Required	●
SW18	498020.588	101759.609	498020.588	101759.609	Required	●
SW20	498019.235	101715.724	498019.235	101715.724	Required	●
SW19	498035.198	101721.911	498035.198	101721.911	Required	●
SW4	498043.325	101725.068	498043.325	101725.068	Required	●
SW5	498054.933	101695.195	498054.933	101695.195	Required	●
SW14	497931.041	101656.360	497931.041	101656.360	Required	●
Gabion HW	497943.256	101689.431	497943.256	101689.431	Required	●
RE5	497968.354	101685.745	497968.354	101685.745	Required	●
RE2	497962.253	101671.596	497962.253	101671.596	Required	●

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Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW6	497965.931	101679.139	497965.931	101679.139	Required	⊗
RE6	498003.646	101670.167	498003.646	101670.167	Required	⊗
RE3	497997.379	101656.099	497997.379	101656.099	Required	⊗
SW7	498001.497	101663.273	498001.497	101663.273	Required	⊗
RE4	498004.907	101652.731	498004.907	101652.731	Required	⊗
SW8	498010.527	101659.359	498010.527	101659.359	Required	⊗
Perm Pav 1	497947.290	101664.312	497947.290	101664.312	Required	⊗
RE1	497956.193	101657.975	497956.193	101657.975	Required	⊗
Perm Pav 15a	497990.680	101644.889	497990.680	101644.889	Required	⊗
Perm Pav 15b	498008.648	101637.892	498008.648	101637.892	Required	⊗
SW15	497998.245	101639.419	497998.245	101639.419	Required	⊗
SW16	497964.026	101728.967	497964.026	101728.967	Required	⊗
SW17	497967.733	101719.401	497967.733	101719.401	Required	⊗
Swale	497965.231	101713.600	497965.231	101713.600	Required	⊗
RE7	497975.142	101700.660	497975.142	101700.660	Required	⊗
SW9	497978.171	101707.776	497978.171	101707.776	Required	⊗
SW11	498002.991	101743.031	498002.991	101743.031	Required	⊗
SW12	497996.317	101724.584	497996.317	101724.584	Required	⊗
SW13	498003.732	101705.451	498003.732	101705.451	Required	⊗

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Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
Swale	498000.554	101697.917	498000.554	101697.917	Required	
RE8	498010.268	101685.163	498010.268	101685.163	Required	
SW10	498013.991	101691.976	498013.991	101691.976	Required	
FW5	498047.056	101698.496	498047.056	101698.496	Required	
Gabion HW	498021.090	101623.117	498021.090	101623.117	Required	
SW20	498025.533	101618.519	498025.533	101618.519	Required	
Outfall	498029.291	101614.686			No Entry	

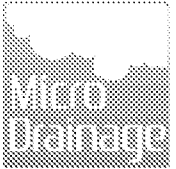
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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.073	0.073	0.073
1.001	-	-	100	0.006	0.006	0.006
1.002	-	-	100	0.000	0.000	0.000
2.000	-	-	100	0.067	0.067	0.067
3.000	-	-	100	0.009	0.009	0.009
2.001	-	-	100	0.000	0.000	0.000
1.003	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.000	0.000	0.000
4.000	-	-	100	0.045	0.045	0.045
5.000	-	-	100	0.006	0.006	0.006
6.000	-	-	100	0.020	0.020	0.020
7.000	-	-	100	0.018	0.018	0.018
5.001	-	-	100	0.000	0.000	0.000
8.000	-	-	100	0.027	0.027	0.027
9.000	-	-	100	0.025	0.025	0.025
5.002	-	-	100	0.021	0.021	0.021
10.000	-	-	100	0.006	0.006	0.006
5.003	-	-	100	0.000	0.000	0.000
11.000	-	-	100	0.018	0.018	0.018
11.001	-	-	100	0.000	0.000	0.000
12.000	-	-	100	0.042	0.042	0.042
13.000	-	-	100	0.010	0.010	0.010
12.001	-	-	100	0.000	0.000	0.000
14.000	-	-	100	0.025	0.025	0.025
14.001	-	-	100	0.000	0.000	0.000
14.002	-	-	100	0.012	0.012	0.012
15.000	-	-	100	0.020	0.020	0.020
14.003	-	-	100	0.000	0.000	0.000
16.000	-	-	100	0.053	0.053	0.053
16.001	-	-	100	0.011	0.011	0.011
16.002	-	-	100	0.000	0.000	0.000
14.004	-	-	100	0.000	0.000	0.000
17.000	-	-	100	0.030	0.030	0.030
14.005	-	-	100	0.030	0.030	0.030
18.000	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.000	0.000	0.000
1.006	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.574	0.574	0.574

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D, L (mm)	W (mm)
1.006	Outfall	4.000	1.500	0.000	0	0

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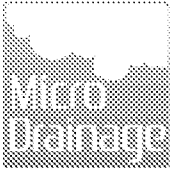
Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	2	Number of Storage Structures	11	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	E (1km)	0.311
Return Period (years)	100	F (1km)	2.320
FEH Rainfall Version	1999	Summer Storms	Yes
Site Location	GB 498000 101400 SU 98000 01400	Winter Storms	No
C (1km)	-0.026	Cv (Summer)	0.750
D1 (1km)	0.390	Cv (Winter)	0.840
D2 (1km)	0.244	Storm Duration (mins)	30
D3 (1km)	0.410		

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Online Controls for Storm

Non Return Valve Manhole: SW15, DS/PN: 12.001, Volume (m³): 0.3

Complex Manhole: Gabion HW, DS/PN: 1.005, Volume (m³): 3.9

Orifice

Diameter (m) 0.001 Discharge Coefficient 0.600 Invert Level (m) 2.600

Hydro-Brake® Optimum

Unit Reference MD-SHE-0074-2000-0500-2000
Design Head (m) 0.500
Design Flow (l/s) 2.0
Flush-Flo™ Calculated
Objective Minimise upstream storage
Application Surface
Sump Available Yes
Diameter (mm) 74
Invert Level (m) 3.000
Minimum Outlet Pipe Diameter (mm) 100
Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.500	2.0	Kick-Flo®	0.342	1.7
Flush-Flo™	0.149	2.0	Mean Flow over Head Range	-	1.7

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	1.9	0.800	2.5	2.000	3.8	4.000	5.2	7.000	6.8
0.200	2.0	1.000	2.7	2.200	3.9	4.500	5.5	7.500	7.1
0.300	1.8	1.200	3.0	2.400	4.1	5.000	5.8	8.000	7.3
0.400	1.8	1.400	3.2	2.600	4.3	5.500	6.1	8.500	7.5
0.500	2.0	1.600	3.4	3.000	4.6	6.000	6.3	9.000	7.8
0.600	2.2	1.800	3.6	3.500	4.9	6.500	6.6	9.500	8.0

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Storage Structures for Storm

Porous Car Park Manhole: RE5, DS/PN: 6.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.0
Membrane Percolation (mm/hr)	1000	Length (m)	25.0
Max Percolation (l/s)	34.7	Slope (1:X)	100.0
Safety Factor	2.0	Depression Storage (mm)	0
Porosity	0.30	Evaporation (mm/day)	0
Invert Level (m)	3.540	Cap Volume Depth (m)	0.300

Porous Car Park Manhole: RE2, DS/PN: 7.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.0
Membrane Percolation (mm/hr)	1000	Length (m)	25.0
Max Percolation (l/s)	34.7	Slope (1:X)	59.5
Safety Factor	2.0	Depression Storage (mm)	0
Porosity	0.30	Evaporation (mm/day)	0
Invert Level (m)	3.630	Cap Volume Depth (m)	0.300

Porous Car Park Manhole: RE6, DS/PN: 8.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.0
Membrane Percolation (mm/hr)	1000	Length (m)	31.0
Max Percolation (l/s)	43.1	Slope (1:X)	106.9
Safety Factor	2.0	Depression Storage (mm)	0
Porosity	0.30	Evaporation (mm/day)	0
Invert Level (m)	3.170	Cap Volume Depth (m)	0.300

Porous Car Park Manhole: RE3, DS/PN: 9.000

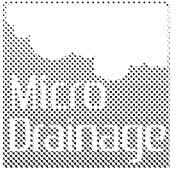
Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.0
Membrane Percolation (mm/hr)	1000	Length (m)	31.0
Max Percolation (l/s)	43.1	Slope (1:X)	60.8
Safety Factor	2.0	Depression Storage (mm)	0
Porosity	0.30	Evaporation (mm/day)	0
Invert Level (m)	3.000	Cap Volume Depth (m)	0.300

Porous Car Park Manhole: RE4, DS/PN: 10.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.0
Membrane Percolation (mm/hr)	1000	Length (m)	12.0
Max Percolation (l/s)	16.7	Slope (1:X)	240.0
Safety Factor	2.0	Depression Storage (mm)	0
Porosity	0.30	Evaporation (mm/day)	0
Invert Level (m)	3.070	Cap Volume Depth (m)	0.300

Porous Car Park Manhole: Perm Pav 1, DS/PN: 11.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.0
Membrane Percolation (mm/hr)	1000	Length (m)	22.0
Max Percolation (l/s)	30.6	Slope (1:X)	61.1
Safety Factor	2.0	Depression Storage (mm)	0
Porosity	0.30	Evaporation (mm/day)	0
Invert Level (m)	3.630	Cap Volume Depth (m)	0.300

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Porous Car Park Manhole: Perm Pav 15a, DS/PN: 12.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.0
Membrane Percolation (mm/hr)	1000	Length (m)	40.0
Max Percolation (l/s)	55.6	Slope (1:X)	66.7
Safety Factor	2.0	Depression Storage (mm)	0
Porosity	0.30	Evaporation (mm/day)	0
Invert Level (m)	2.910	Cap Volume Depth (m)	0.300

Porous Car Park Manhole: Perm Pav 15b, DS/PN: 13.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.0
Membrane Percolation (mm/hr)	1000	Length (m)	12.0
Max Percolation (l/s)	16.7	Slope (1:X)	300.0
Safety Factor	2.0	Depression Storage (mm)	0
Porosity	0.30	Evaporation (mm/day)	0
Invert Level (m)	2.920	Cap Volume Depth (m)	0.300

Porous Car Park Manhole: RE7, DS/PN: 15.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.0
Membrane Percolation (mm/hr)	1000	Length (m)	20.0
Max Percolation (l/s)	27.8	Slope (1:X)	111.1
Safety Factor	2.0	Depression Storage (mm)	0
Porosity	0.30	Evaporation (mm/day)	0
Invert Level (m)	3.540	Cap Volume Depth (m)	0.300

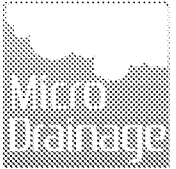
Porous Car Park Manhole: RE8, DS/PN: 17.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.0
Membrane Percolation (mm/hr)	1000	Length (m)	32.0
Max Percolation (l/s)	44.4	Slope (1:X)	110.3
Safety Factor	2.0	Depression Storage (mm)	0
Porosity	0.30	Evaporation (mm/day)	0
Invert Level (m)	3.170	Membrane Depth (mm)	150

Tank or Pond Manhole: Gabion HW, DS/PN: 1.005

Invert Level (m) 3.000

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	1400.0	0.500	1680.0

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

Simulation Criteria

Areal Reduction Factor 1.000 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 11 Number of Real Time Controls 0

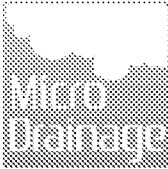
Synthetic Rainfall Details

Rainfall Model FEH Data Type Catchment
 FEH Rainfall Version 2013 Cv (Summer) 0.750
 Site Location GB 498000 101400 SU 98000 01400 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, 240, 360, 480, 960, 1440
 Return Period(s) (years) 2, 30, 100
 Climate Change (%) 0, 0, 40

PN	US/MH Name	Event	US/CL (m)	Water Surcharged			Volume (m³)	Overflow (l/s)	Maximum Vol (m³)	Discharge Vol (m³)
				Level (m)	Depth (m)	Flooded				
1.000	SW1	15 minute 2 year Winter I+0%	4.850	4.223	-0.152	0.000			0.019	5.811
1.001	SW2	15 minute 2 year Winter I+0%	4.500	3.784	-0.141	0.000			0.061	6.288
1.002	SW3	15 minute 2 year Winter I+0%	4.500	3.411	-0.144	0.000			0.080	6.288
2.000	SW18	15 minute 2 year Winter I+0%	4.700	3.776	-0.149	0.000			0.020	5.333
3.000	SW20	15 minute 2 year Winter I+0%	4.700	3.615	-0.200	0.000			0.006	0.717
2.001	SW19	15 minute 2 year Winter I+0%	4.700	3.373	-0.152	0.000			0.096	6.050
1.003	SW4	15 minute 2 year Winter I+0%	4.500	3.241	-0.104	0.000			0.183	12.338
1.004	SW5	15 minute 2 year Winter I+0%	4.000	3.100	0.075	0.000			0.795	11.849
4.000	SW14	15 minute 2 year Summer I+0%	4.350	3.633	-0.067	0.000			0.022	3.198
5.000	Gabion HW	15 minute 2 year Winter I+0%	4.500	3.809	-0.691	0.000			0.001	0.478
6.000	RE5	15 minute 2 year Summer I+0%	3.950	3.492	-0.108	0.000			0.011	1.423
7.000	RE2	15 minute 2 year Winter I+0%	4.050	3.538	-0.112	0.000			0.009	1.433
5.001	SW6	15 minute 2 year Summer I+0%	3.970	3.298	-0.672	0.000			0.024	3.129
8.000	RE6	15 minute 2 year Summer I+0%	3.550	3.103	-0.097	0.000			0.013	1.920
9.000	RE3	1440 minute 2 year Winter I+0%	3.550	3.089	-0.061	0.000			0.385	8.505
5.002	SW7	1440 minute 2 year Winter I+0%	3.600	3.089	-0.006	0.000			2.835	38.516
10.000	RE4	1440 minute 2 year Winter I+0%	3.600	3.088	-0.062	0.000			0.084	2.046
5.003	SW8	1440 minute 2 year Winter I+0%	4.050	3.088	0.093	0.000			0.582	40.084
11.000	Perm Pav 1	15 minute 2 year Winter I+0%	4.050	3.668	-0.112	0.000			0.075	1.434
11.001	RE1	15 minute 2 year Winter I+0%	4.050	3.551	-0.099	0.000			0.022	1.434
12.000	Perm Pav 15a	1440 minute 2 year Winter I+0%	3.350	3.088	0.028	0.000			1.637	13.374
13.000	Perm Pav 15b	1440 minute 2 year Winter I+0%	3.350	3.088	0.018	0.000			2.709	1.692
12.001	SW15	1440 minute 2 year Winter I+0%	3.450	3.088	0.038	0.000			0.196	14.921
14.000	SW16	15 minute 2 year Winter I+0%	4.800	3.851	-0.099	0.000			0.013	1.990
14.001	SW17	15 minute 2 year Summer I+0%	4.500	3.751	-0.069	0.000			0.053	1.777
14.002	Swale	15 minute 2 year Winter I+0%	4.500	3.691	-0.809	0.000			0.031	2.945
15.000	RE7	15 minute 2 year Winter I+0%	4.050	3.596	-0.094	0.000			0.276	1.592
14.003	SW9	15 minute 2 year Winter I+0%	4.150	3.552	-0.598	0.000			0.207	4.536
16.000	SW11	15 minute 2 year Winter I+0%	4.750	3.969	-0.156	0.000			0.018	4.219

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

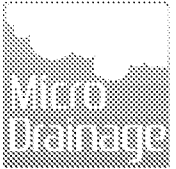
PN	US/MH Name	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	SW1		13.3	OK
1.001	SW2		13.7	OK
1.002	SW3		13.9	OK
2.000	SW18		12.1	OK
3.000	SW20		1.6	OK
2.001	SW19		13.6	OK
1.003	SW4		27.2	OK
1.004	SW5		26.9	SURCHARGED
4.000	SW14		8.2	OK
5.000	Gabion HW		1.1	OK
6.000	RE5	5	3.7	OK
7.000	RE2	5	3.3	OK
5.001	SW6		7.8	OK
8.000	RE6	5	4.9	OK
9.000	RE3	705	0.2	OK
5.002	SW7		1.1	OK
10.000	RE4	341	0.1	OK
5.003	SW8		1.1	SURCHARGED
11.000	Perm Pav 1	4	3.3	OK
11.001	RE1		3.2	OK
12.000	Perm Pav 15a	1611	0.4	FLOOD RISK
13.000	Perm Pav 15b		0.0	FLOOD RISK
12.001	SW15		0.4	SURCHARGED
14.000	SW16		4.6	OK
14.001	SW17		4.6	OK
14.002	Swale		6.3	OK
15.000	RE7	5	3.3	OK
14.003	SW9		9.5	OK
16.000	SW11		9.7	OK

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

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Overflow (l/s)	Maximum Vol (m³)	Discharge (m³)
16.001	SW12	15 minute 2 year Winter I+0%	4.700	3.775	-0.150	0.000		0.067	5.094
16.002	SW13	15 minute 2 year Winter I+0%	4.500	3.560	-0.165	0.000		0.055	5.094
14.004	Swale	15 minute 2 year Winter I+0%	4.500	3.331	-1.169	0.000		0.315	9.627
17.000	RE8	15 minute 2 year Summer I+0%	3.600	3.157	-0.093	0.000		0.015	2.133
14.005	SW10	15 minute 2 year Winter I+0%	4.100	3.121	-0.024	0.000		0.770	14.240
18.000	FW5	1440 minute 2 year Winter I+0%	4.300	3.088	0.058	0.000		0.057	17.237
1.005	Gabion HW	1440 minute 2 year Winter I+0%	4.200	3.087	0.337	0.000		127.882	160.603
1.006	SW20	1440 minute 2 year Winter I+0%	4.000	2.019	-0.131	0.000		0.017	160.586

PN	US/MH Name	Half Drain Time (mins)	Pipe Flow (l/s)	Status
16.001	SW12		11.2	OK
16.002	SW13		11.1	OK
14.004	Swale		20.6	OK
17.000	RE8	5	5.5	OK
14.005	SW10		28.2	OK
18.000	FW5		0.1	SURCHARGED
1.005	Gabion HW		1.8	SURCHARGED
1.006	SW20		1.8	OK

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Raven House 29 Linkfield Lane Surrey RH1 1SS	13591-Arun Crem Proposed SW Network Rev P2	
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XP Solutions		Network 2020.1

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 11 Number of Real Time Controls 0

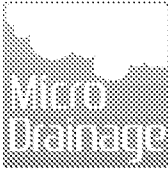
Synthetic Rainfall Details

Rainfall Model FEH Data Type Catchment
 FEH Rainfall Version 2013 Cv (Summer) 0.750
 Site Location GB 498000 101400 SU 98000 01400 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

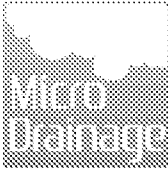
Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 2, 30, 100
 Climate Change (%) 0, 0, 40

PN	US/MH Name	Event	US/CL (m)	Water Surcharged			Volume (m³)	Overflow (l/s)	Maximum Vol (m³)	Discharge Vol (m³)
				Level (m)	Depth (m)	Flooded				
1.000	SW1	15 minute 30 year Winter I+0%	4.850	4.260	-0.115	0.000			0.030	12.304
1.001	SW2	15 minute 30 year Winter I+0%	4.500	3.832	-0.093	0.000			0.137	13.315
1.002	SW3	15 minute 30 year Winter I+0%	4.500	3.598	0.043	0.000			0.724	13.315
2.000	SW18	15 minute 30 year Winter I+0%	4.700	3.816	-0.109	0.000			0.031	11.293
3.000	SW20	15 minute 30 year Winter I+0%	4.700	3.625	-0.190	0.000			0.008	1.517
2.001	SW19	15 minute 30 year Winter I+0%	4.700	3.561	0.036	0.000			0.971	12.810
1.003	SW4	15 minute 30 year Winter I+0%	4.500	3.534	0.189	0.000			1.136	26.125
1.004	SW5	15 minute 30 year Winter I+0%	4.000	3.233	0.208	0.000			1.248	25.501
4.000	SW14	15 minute 30 year Summer I+0%	4.350	3.725	0.025	0.000			0.045	6.772
5.000	Gabion HW	15 minute 30 year Winter I+0%	4.500	3.819	-0.681	0.000			0.004	1.012
6.000	RE5	15 minute 30 year Winter I+0%	3.950	3.513	-0.087	0.000			0.017	3.372
7.000	RE2	15 minute 30 year Winter I+0%	4.050	3.556	-0.094	0.000			0.015	3.035
5.001	SW6	15 minute 30 year Summer I+0%	3.970	3.321	-0.649	0.000			0.037	6.625
8.000	RE6	15 minute 30 year Winter I+0%	3.550	3.184	-0.016	0.000			0.052	4.545
9.000	RE3	15 minute 30 year Winter I+0%	3.550	3.180	0.030	0.000			1.525	3.982
5.002	SW7	15 minute 30 year Winter I+0%	3.600	3.167	0.072	0.000			5.932	17.375
10.000	RE4	960 minute 30 year Winter I+0%	3.600	3.153	0.003	0.000			1.080	3.084
5.003	SW8	960 minute 30 year Winter I+0%	4.050	3.153	0.158	0.000			0.613	60.859
11.000	Perm Pav 1	15 minute 30 year Winter I+0%	4.050	3.687	-0.093	0.000			0.163	3.035
11.001	RE1	15 minute 30 year Winter I+0%	4.050	3.579	-0.071	0.000			0.035	3.035
12.000	Perm Pav 15a	960 minute 30 year Winter I+0%	3.350	3.153	0.093	0.000			3.011	20.155
13.000	Perm Pav 15b	960 minute 30 year Winter I+0%	3.350	3.152	0.082	0.000			3.886	2.541
12.001	SW15	960 minute 30 year Winter I+0%	3.450	3.152	0.102	0.000			0.225	22.504
14.000	SW16	15 minute 30 year Winter I+0%	4.800	3.879	-0.071	0.000			0.021	4.214
14.001	SW17	15 minute 30 year Summer I+0%	4.500	3.825	0.005	0.000			0.137	3.763
14.002	Swale	15 minute 30 year Winter I+0%	4.500	3.714	-0.786	0.000			0.052	6.236
15.000	RE7	15 minute 30 year Winter I+0%	4.050	3.625	-0.065	0.000			0.629	3.371
14.003	SW9	15 minute 30 year Winter I+0%	4.150	3.576	-0.574	0.000			0.316	9.606
16.000	SW11	15 minute 30 year Winter I+0%	4.750	4.003	-0.122	0.000			0.028	8.933

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Raven House 29 Linkfield Lane Surrey RH1 1SS	13591-Arun Crem Proposed SW Network Rev P2	
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XP Solutions	Network 2020.1	

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

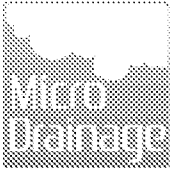
PN	US/MH Name	Half Drain Pipe		Status
		Time (mins)	Flow (l/s)	
1.000	SW1		28.1	OK
1.001	SW2		29.5	OK
1.002	SW3		25.6	SURCHARGED
2.000	SW18		25.6	OK
3.000	SW20		3.5	OK
2.001	SW19		24.1	SURCHARGED
1.003	SW4		47.1	SURCHARGED
1.004	SW5		47.1	SURCHARGED
4.000	SW14		17.5	SURCHARGED
5.000	Gabion HW		2.3	OK
6.000	RE5	5	7.7	OK
7.000	RE2	5	7.0	OK
5.001	SW6		16.6	OK
8.000	RE6	5	9.8	OK
9.000	RE3	6	4.8	SURCHARGED
5.002	SW7		22.9	SURCHARGED
10.000	RE4	449	0.1	SURCHARGED
5.003	SW8		2.5	SURCHARGED
11.000	Perm Pav 1	4	6.9	OK
11.001	RE1		6.8	OK
12.000	Perm Pav 15a		0.8	FLOOD RISK
13.000	Perm Pav 15b		0.1	FLOOD RISK
12.001	SW15		0.9	FLOOD RISK
14.000	SW16		9.7	OK
14.001	SW17		8.8	SURCHARGED
14.002	Swale		14.3	OK
15.000	RE7	5	6.7	OK
14.003	SW9		20.5	OK
16.000	SW11		20.5	OK

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Raven House 29 Linkfield Lane Surrey RH1 1SS	13591-Arun Crem Proposed SW Network Rev P2	
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XP Solutions	Network 2020.1	

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

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Overflow (l/s)	Maximum Vol (m³)	Discharge (m³)
16.001	SW12	15 minute 30 year Winter I+0%	4.700	3.817	-0.108	0.000		0.131	10.787
16.002	SW13	15 minute 30 year Winter I+0%	4.500	3.592	-0.133	0.000		0.087	10.787
14.004	Swale	15 minute 30 year Winter I+0%	4.500	3.366	-1.134	0.000		0.606	20.390
17.000	RE8	15 minute 30 year Winter I+0%	3.600	3.316	0.066	0.000		1.821	5.058
14.005	SW10	15 minute 30 year Winter I+0%	4.100	3.306	0.161	0.000		4.205	30.091
18.000	FW5	960 minute 30 year Winter I+0%	4.300	3.152	0.122	0.000		0.076	11.462
1.005	Gabion HW	960 minute 30 year Winter I+0%	4.200	3.152	0.402	0.000		222.167	181.165
1.006	SW20	960 minute 30 year Winter I+0%	4.000	2.020	-0.130	0.000		0.018	181.121

PN	US/MH Name	Half Drain Time (mins)	Pipe Flow (l/s)	Status
16.001	SW12		24.5	OK
16.002	SW13		24.3	OK
14.004	Swale		44.9	OK
17.000	RE8	4	11.2	FLOOD RISK
14.005	SW10		44.8	SURCHARGED
18.000	FW5		0.1	SURCHARGED
1.005	Gabion HW		2.0	SURCHARGED
1.006	SW20		2.0	OK

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Raven House 29 Linkfield Lane Surrey RH1 1SS	13591-Arun Crem Proposed SW Network Rev P2	
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XP Solutions	Network 2020.1	

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 11 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Catchment
 FEH Rainfall Version 2013 Cv (Summer) 0.750
 Site Location GB 498000 101400 SU 98000 01400 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, 240, 360, 480, 960, 1440
 Return Period(s) (years) 2, 30, 100
 Climate Change (%) 0, 0, 40

							Water	Surcharged	Flooded			
	US/MH						US/CL	Level	Depth	Volume	Overflow	Maximum
PN	Name	Event					(m)	(m)	(m)	(m³)	(l/s)	Vol (m³)
1.000	SW1	15 minute	100 year	Winter	I+40%	4.850	4.690	0.315	0.000			0.151
1.001	SW2	15 minute	100 year	Winter	I+40%	4.500	4.500	0.575	0.250			1.706
1.002	SW3	15 minute	100 year	Winter	I+40%	4.500	4.301	0.746	0.000			1.864
2.000	SW18	15 minute	100 year	Winter	I+40%	4.700	4.514	0.589	0.000			0.229
3.000	SW20	15 minute	100 year	Winter	I+40%	4.700	4.321	0.506	0.000			0.205
2.001	SW19	15 minute	100 year	Winter	I+40%	4.700	4.312	0.787	0.000			2.525
1.003	SW8	15 minute	100 year	Winter	I+40%	4.500	4.180	0.830	0.000			1.323
1.004	SW5	15 minute	100 year	Winter	I+40%	4.000	3.501	0.476	0.000			1.447
4.000	SW14	15 minute	100 year	Summer	I+40%	4.350	3.886	0.186	0.000			0.094
5.000	Gabion HW	15 minute	100 year	Winter	I+40%	4.500	3.826	-0.674	0.000			0.006
6.000	RE5	15 minute	100 year	Winter	I+40%	3.950	3.539	-0.061	0.000			0.024
7.000	RE2	15 minute	100 year	Winter	I+40%	4.050	3.578	-0.072	0.000			0.021
5.001	SW6	15 minute	100 year	Summer	I+40%	3.970	3.342	-0.628	0.000			0.049
8.000	RE6	1440 minute	100 year	Winter	I+40%	3.550	3.276	0.076	0.000			0.965
9.000	RE3	1440 minute	100 year	Winter	I+40%	3.550	3.276	0.126	0.000			3.553
5.002	SW7	1440 minute	100 year	Winter	I+40%	3.600	3.276	0.181	0.000			13.084
10.000	RE4	1440 minute	100 year	Winter	I+40%	3.600	3.275	0.125	0.000			3.322
5.003	SW8	1440 minute	100 year	Winter	I+40%	4.050	3.275	0.280	0.000			0.652
11.000	Perm Pav 1	15 minute	100 year	Winter	I+40%	4.050	3.709	-0.071	0.000			0.304
11.001	RE1	15 minute	100 year	Winter	I+40%	4.050	3.616	-0.034	0.000			0.055
12.000	Perm Pav 15a	1440 minute	100 year	Winter	I+40%	3.350	3.275	0.215	0.000			6.561
13.000	Perm Pav 15b	1440 minute	100 year	Winter	I+40%	3.350	3.275	0.205	0.000			5.499
12.001	SW15	1440 minute	100 year	Winter	I+40%	3.450	3.275	0.225	0.000			0.260
14.000	SW16	15 minute	100 year	Summer	I+40%	4.800	3.995	0.045	0.000			0.054
14.001	SW17	15 minute	100 year	Summer	I+40%	4.500	3.879	0.059	0.000			0.205
14.002	Swale	15 minute	100 year	Summer	I+40%	4.500	3.736	-0.764	0.000			0.071
15.000	RE7	15 minute	100 year	Winter	I+40%	4.050	3.662	-0.028	0.000			1.283
14.003	SW9	15 minute	100 year	Winter	I+40%	4.150	3.600	-0.550	0.000			0.421
16.000	SW11	15 minute	100 year	Winter	I+40%	4.750	4.047	-0.078	0.000			0.040

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XP Solutions	Network 2020.1	

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

PN	US/MH Name	Discharge Vol (m³)	Half Drain Pipe		Status
			Time (mins)	Flow (l/s)	
1.000	SW1	21.633		46.0	FLOOD RISK
1.001	SW2	23.409		40.6	FLOOD
1.002	SW3	23.409		35.3	FLOOD RISK
2.000	SW18	19.850		39.1	FLOOD RISK
3.000	SW20	2.668		5.2	SURCHARGED
2.001	SW19	22.518		36.9	SURCHARGED
1.003	SW4	45.835		71.1	SURCHARGED
1.004	SW5	45.112		70.7	SURCHARGED
4.000	SW14	11.907		30.6	SURCHARGED
5.000	Gabion HW	1.779		4.1	OK
6.000	RE5	5.928	5	13.6	OK
7.000	RE2	5.336	5	12.2	OK
5.001	SW6	11.646		29.1	OK
8.000	RE6	25.945	546	0.8	FLOOD RISK
9.000	RE3	22.471	1305	0.6	FLOOD RISK
5.002	SW7	104.502		2.8	SURCHARGED
10.000	RE4	4.161	1453	0.1	SURCHARGED
5.003	SW8	108.036		2.8	SURCHARGED
11.000	Perm Pav 1	5.335	4	12.1	OK
11.001	RE1	5.336		12.0	OK
12.000	Perm Pav 15a	36.288		1.0	FLOOD RISK
13.000	Perm Pav 15b	5.117		0.1	FLOOD RISK
12.001	SW15	41.171		1.1	FLOOD RISK
14.000	SW16	6.616		17.0	SURCHARGED
14.001	SW17	6.616		16.9	SURCHARGED
14.002	Swale	9.790		24.9	OK
15.000	RE7	5.927	5	11.0	OK
14.003	SW9	16.891		35.3	OK
16.000	SW11	15.707		36.0	OK

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XP Solutions	Network 2020.1	

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

PN	US/MH Name	Event	US/CL (m)	Water Surcharged Flooded			Overflow (l/s)	Maximum Vol (m³)	Discharge Vol (m³)
				Level (m)	Depth (m)	Volume (m³)			
16.001	SW12	15 minute 100 year Winter I+40%	4.700	3.871	-0.054	0.000		0.290	18.967
16.002	SW13	15 minute 100 year Winter I+40%	4.500	3.628	-0.097	0.000		0.170	18.967
14.004	Swale	15 minute 100 year Winter I+40%	4.500	3.469	-1.031	0.000		2.638	35.855
17.000	RE8	15 minute 100 year Winter I+40%	3.600	3.459	0.209	0.000		7.018	8.891
14.005	SW10	15 minute 100 year Winter I+40%	4.100	3.464	0.318	0.000		10.110	52.876
18.000	FW5	1440 minute 100 year Winter I+40%	4.300	3.275	0.245	0.000		0.110	17.194
1.005	Gabion HW	1440 minute 100 year Winter I+40%	4.200	3.274	0.524	0.000		408.154	283.537
1.006	SW20	1440 minute 100 year Summer I+40%	4.000	2.020	-0.130	0.000		0.018	280.799

PN	US/MH Name	Half Drain Pipe		Status
		Time (mins)	Flow (l/s)	
16.001	SW12		43.1	OK
16.002	SW13		42.6	OK
14.004	Swale		68.8	OK
17.000	RE8	7	17.5	FLOOD RISK
14.005	SW10		55.1	SURCHARGED
18.000	FW5		0.1	SURCHARGED
1.005	Gabion HW		2.0	SURCHARGED
1.006	SW20		2.0	OK

Arun Crematorium

Design Calculations

13591 - Proposed Surface Water Network

13591-CRH-XX-XX-CA-C-0007

Rev P2

***ADDENDUM – Additional simulation results
(1:30 +40% and 1:100 +0%)***

Date: 28/09/22

Project No: 13591

Engineer: J. Adams

Checked: A. Higgins

Campbell Reith Hill LLP
Raven House
29 Linkfield Lane
Redhill

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Raven House 29 Linkfield Lane Surrey RH1 1SS	13591-Arun Crem Proposed SW Network Rev P2	
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XP Solutions	Network 2020.1	

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 11 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Catchment
 FEH Rainfall Version 2013 Cv (Summer) 0.750
 Site Location GB 498000 101400 SU 98000 01400 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, 240, 360, 480, 960, 1440
 Return Period(s) (years) 30, 100
 Climate Change (%) 40, 0

PN	US/MH Name	Event	Water			Surcharged		Flooded Volume (m³)	Overflow (l/s)	Total Infil. Vol (m³)	Maximum Vol (m³)
			Level (m)	Depth (m)	Volume (m³)	Depth (m)	Volume (m³)				
1.000	SW1	15 minute 30 year Winter I+40%	4.286	-0.089	0.000						0.037
1.001	SW2	15 minute 30 year Winter I+40%	4.085	0.160	0.000						0.839
1.002	SW3	15 minute 30 year Winter I+40%	3.935	0.380	0.000						1.760
2.000	SW18	15 minute 30 year Winter I+40%	3.995	0.070	0.000						0.082
3.000	SW20	15 minute 30 year Winter I+40%	3.902	0.087	0.000						0.087
2.001	SW19	15 minute 30 year Winter I+40%	3.896	0.371	0.000						2.394
1.003	SW4	15 minute 30 year Winter I+40%	3.827	0.482	0.000						1.223
1.004	SW5	15 minute 30 year Winter I+40%	3.358	0.333	0.000						1.402
4.000	SW14	15 minute 30 year Summer I+40%	3.789	0.099	0.000						0.049
5.000	Gabion HW	15 minute 30 year Winter I+40%	3.822	-0.678	0.000						0.005
6.000	RE5	15 minute 30 year Winter I+40%	3.527	-0.073	0.000					0.000	0.020
7.000	RE2	15 minute 30 year Winter I+40%	3.568	-0.082	0.000					0.000	0.018
5.001	SW6	15 minute 30 year Summer I+40%	3.332	-0.638	0.000						0.043
8.000	RE6	30 minute 30 year Winter I+40%	3.230	0.030	0.000					0.000	0.343
9.000	RE3	30 minute 30 year Winter I+40%	3.230	0.080	0.000					0.000	2.484
5.002	SW7	960 minute 30 year Winter I+40%	3.222	0.127	0.000						9.400
10.000	RE4	960 minute 30 year Winter I+40%	3.221	0.071	0.000					0.000	2.332
5.003	SW8	960 minute 30 year Winter I+40%	3.221	0.226	0.000						0.637
11.000	Perm Pav 1	15 minute 30 year Winter I+40%	3.699	-0.081	0.000					0.000	0.234
11.001	RE1	15 minute 30 year Winter I+40%	3.598	-0.052	0.000						0.044
12.000	Perm Pav 15a	960 minute 30 year Winter I+40%	3.221	0.161	0.000					0.000	4.919
13.000	Perm Pav 15b	960 minute 30 year Winter I+40%	3.221	0.151	0.000					0.000	5.137
12.001	SW15	960 minute 30 year Winter I+40%	3.221	0.171	0.000						0.245
14.000	SW16	15 minute 30 year Summer I+40%	3.923	-0.027	0.000						0.033
14.001	SW17	15 minute 30 year Summer I+40%	3.849	0.029	0.000						0.167
14.002	Swale	15 minute 30 year Summer I+40%	3.726	-0.774	0.000						0.062
15.000	RE7	15 minute 30 year Winter I+40%	3.645	-0.045	0.000					0.000	0.946
14.003	SW9	15 minute 30 year Winter I+40%	3.589	-0.561	0.000						0.373
16.000	SW11	15 minute 30 year Winter I+40%	4.026	-0.099	0.000						0.034
16.001	SW12	15 minute 30 year Winter I+40%	3.845	-0.080	0.000						0.214

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Raven House 29 Linkfield Lane Surrey RH1 1SS	13591-Arun Crem Proposed SW Network Rev P2	
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XP Solutions		Network 2020.1

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

PN	US/MH Name	Discharge Vol (m³)	Half Drain Pipe		Status
			Time (mins)	Flow (l/s)	
1.000	SW1	17.226		39.3	OK
1.001	SW2	18.642		38.3	SURCHARGED
1.002	SW3	18.642		31.6	SURCHARGED
2.000	SW18	15.806		35.1	SURCHARGED
3.000	SW20	2.124		4.7	SURCHARGED
2.001	SW19	17.931		27.9	SURCHARGED
1.003	SW4	36.572		58.7	SURCHARGED
1.004	SW5	35.887		59.0	SURCHARGED
4.000	SW14	9.481		24.4	SURCHARGED
5.000	Gabion HW	1.416		3.2	OK
6.000	RE5	4.721	5	10.8	OK
7.000	RE2	4.249	5	9.7	OK
5.001	SW6	9.274		23.2	OK
8.000	RE6	8.389	5	9.8	SURCHARGED
9.000	RE3	7.137	12	5.3	SURCHARGED
5.002	SW7	79.114		3.2	SURCHARGED
10.000	RE4	3.254	970	0.1	SURCHARGED
5.003	SW8	81.753		3.2	SURCHARGED
11.000	Perm Pav 1	4.248	4	9.6	OK
11.001	RE1	4.249		9.6	OK
12.000	Perm Pav 15a	27.300		1.1	FLOOD RISK
13.000	Perm Pav 15b	3.291		0.1	FLOOD RISK
12.001	SW15	30.364		1.2	FLOOD RISK
14.000	SW16	5.268		13.5	OK
14.001	SW17	5.268		13.6	SURCHARGED
14.002	Swale	7.795		20.0	OK
15.000	RE7	4.719	5	9.1	OK
14.003	SW9	13.449		28.5	OK
16.000	SW11	12.507		28.6	OK
16.001	SW12	15.102		34.3	OK

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

PN	US/MH Name	Event	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Overflow (l/s)	Total Infil. Vol (m³)	Maximum Vol (m³)
16.002	SW13	15 minute 30 year Winter I+40%	3.611	-0.114	0.000			0.119
14.004	Swale	15 minute 30 year Winter I+40%	3.406	-1.094	0.000			1.299
17.000	RE8	15 minute 30 year Winter I+40%	3.399	0.149	0.000		0.000	4.431
14.005	SW10	15 minute 30 year Winter I+40%	3.396	0.251	0.000			7.232
18.000	FW5	960 minute 30 year Winter I+40%	3.221	0.191	0.000			0.095
1.005	Gabion HW	960 minute 30 year Winter I+40%	3.220	0.470	0.000			324.924
1.006	SW20	960 minute 30 year Summer I+40%	2.020	-0.130	0.000			0.018

		Half Drain		Pipe		
PN	US/MH Name	Discharge Vol (m³)	Time (mins)	Flow (l/s)	Status	
16.002	SW13	15.102		34.0	OK	
14.004	Swale	28.548		58.6	OK	
17.000	RE8	7.080	6	15.3	FLOOD RISK	
14.005	SW10	42.109		51.1	SURCHARGED	
18.000	FW5	11.442		0.1	SURCHARGED	
1.005	Gabion HW	187.575		2.0	SURCHARGED	
1.006	SW20	184.585		2.0	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 11 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Catchment
 FEH Rainfall Version 2013 Cv (Summer) 0.750
 Site Location GB 498000 101400 SU 98000 01400 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, 240, 360, 480, 960, 1440
 Return Period(s) (years) 30, 100
 Climate Change (%) 40, 0

PN	US/MH Name	Event	Water			Surcharged		Flooded Volume (m³)	Overflow (l/s)	Total	
			Level (m)	Depth (m)	Volume (m³)	Level (m)	Depth (m)			Infil. Vol (m³)	Maximum Vol (m³)
1.000	SW1	15 minute 100 year Winter I+0%	4.277	-0.098	0.000						0.034
1.001	SW2	15 minute 100 year Winter I+0%	3.932	0.007	0.000						0.380
1.002	SW3	15 minute 100 year Winter I+0%	3.804	0.249	0.000						1.565
2.000	SW18	15 minute 100 year Winter I+0%	3.849	-0.076	0.000						0.041
3.000	SW20	15 minute 100 year Winter I+0%	3.769	-0.046	0.000						0.049
2.001	SW19	15 minute 100 year Winter I+0%	3.763	0.238	0.000						2.091
1.003	SW4	15 minute 100 year Winter I+0%	3.710	0.385	0.000						1.196
1.004	SW5	15 minute 100 year Winter I+0%	3.811	0.286	0.000						1.384
4.000	SW14	15 minute 100 year Summer I+0%	3.776	0.076	0.000						0.061
5.000	Gabion HW	15 minute 100 year Winter I+0%	3.821	-0.679	0.000						0.005
6.000	RE5	15 minute 100 year Winter I+0%	3.522	-0.078	0.000					0.000	0.019
7.000	RE2	15 minute 100 year Winter I+0%	3.564	-0.086	0.000					0.000	0.017
5.001	SW6	15 minute 100 year Summer I+0%	3.329	-0.641	0.000						0.041
8.000	RE6	30 minute 100 year Winter I+0%	3.215	0.015	0.000					0.000	0.204
9.000	RE3	30 minute 100 year Winter I+0%	3.214	0.064	0.000					0.000	2.146
5.002	SW7	30 minute 100 year Winter I+0%	3.200	0.105	0.000						7.914
10.000	RE4	960 minute 100 year Winter I+0%	3.192	0.042	0.000					0.000	1.798
5.003	SW8	960 minute 100 year Winter I+0%	3.192	0.197	0.000						0.628
11.000	Perm Pav 1	15 minute 100 year Winter I+0%	3.695	-0.085	0.000					0.000	0.208
11.001	RE1	15 minute 100 year Winter I+0%	3.591	-0.059	0.000						0.040
12.000	Perm Pav 15a	960 minute 100 year Winter I+0%	3.192	0.132	0.000					0.000	4.052
13.000	Perm Pav 15b	960 minute 100 year Winter I+0%	3.192	0.122	0.000					0.000	4.603
12.001	SW15	960 minute 100 year Winter I+0%	3.192	0.142	0.000						0.237
14.000	SW16	15 minute 100 year Summer I+0%	3.899	-0.051	0.000						0.027
14.001	SW17	15 minute 100 year Summer I+0%	3.838	0.018	0.000						0.154
14.002	Swale	15 minute 100 year Summer I+0%	3.722	-0.778	0.000						0.059
15.000	RE7	15 minute 100 year Winter I+0%	3.638	-0.052	0.000					0.000	0.823
14.003	SW9	15 minute 100 year Winter I+0%	3.585	-0.565	0.000						0.353
16.000	SW11	15 minute 100 year Winter I+0%	4.018	-0.107	0.000						0.032
16.001	SW12	15 minute 100 year Winter I+0%	3.835	-0.090	0.000						0.183

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

PN	US/MH Name	Discharge Vol (m³)	Half Drain Pipe		Status
			Time (mins)	Flow (l/s)	
1.000	SW1	15.453		35.3	OK
1.001	SW2	16.723		36.4	SURCHARGED
1.002	SW3	16.723		29.4	SURCHARGED
2.000	SW18	14.180		32.1	OK
3.000	SW20	1.906		4.2	OK
2.001	SW19	16.086		25.5	SURCHARGED
1.003	SW4	32.803		54.2	SURCHARGED
1.004	SW5	32.121		54.4	SURCHARGED
4.000	SW14	8.505		22.0	SURCHARGED
5.000	Gabion HW	1.270		2.9	OK
6.000	RE5	4.235	5	9.7	OK
7.000	RE2	3.812	5	8.7	OK
5.001	SW6	8.320		20.8	OK
8.000	RE6	7.591	5	9.3	SURCHARGED
9.000	RE3	6.503	10	4.9	SURCHARGED
5.002	SW7	29.097		24.5	SURCHARGED
10.000	RE4	3.294	731	0.1	SURCHARGED
5.003	SW8	72.984		2.9	SURCHARGED
11.000	Perm Pav 1	3.811	4	8.7	OK
11.001	RE1	3.812		8.6	OK
12.000	Perm Pav 15a	24.310		1.0	FLOOD RISK
13.000	Perm Pav 15b	2.980		0.1	FLOOD RISK
12.001	SW15	27.072		1.1	FLOOD RISK
14.000	SW16	4.726		12.2	OK
14.001	SW17	4.726		12.3	SURCHARGED
14.002	Swale	6.993		18.0	OK
15.000	RE7	4.234	4	8.3	OK
14.003	SW9	12.065		25.7	OK
16.000	SW11	11.219		25.7	OK
16.001	SW12	13.548		30.8	OK

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XP Solutions		Network 2020.1

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

PN	US/MH Name	Event	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Overflow (l/s)	Total Infil. Vol (m³)	Maximum Vol (m³)
16.002	SW13	15 minute 100 year Winter I+0%	3.604	-0.121	0.000			0.099
14.004	Swale	15 minute 100 year Winter I+0%	3.385	-1.115	0.000			0.927
17.000	RE8	15 minute 100 year Winter I+0%	3.371	0.121	0.000		0.000	3.403
14.005	SW10	15 minute 100 year Winter I+0%	3.384	0.219	0.000			6.119
18.000	FW5	960 minute 100 year Winter I+0%	3.192	0.162	0.000			0.087
1.005	Gabion HW	960 minute 100 year Winter I+0%	3.191	0.441	0.000			280.778
1.006	SW20	960 minute 100 year Winter I+0%	2.020	-0.130	0.000			0.018

		Half Drain		Pipe		
PN	US/MH Name	Discharge Vol (m³)	Time (mins)	Flow (l/s)	Status	
16.002	SW13	13.548		30.5	OK	
14.004	Swale	25.610		55.2	OK	
17.000	RE8	6.352	5	14.0	FLOOD RISK	
14.005	SW10	37.781		49.0	SURCHARGED	
18.000	FW5	11.451		0.1	SURCHARGED	
1.005	Gabion HW	186.495		2.0	SURCHARGED	
1.006	SW20	186.457		2.0	OK	

13591 New Arun Crematorium
Surface Water Calculations - Key Plan
13591-CRH-XX-XX-CA-C-007
Rev P2
04/05/2022
Engineer: JA



Notes

1. Do not scale from this drawing on print or electronically. Work from figured dimensions only.
2. No deviation from the details on this drawing is allowed without CampbellReith's prior permission in writing.
3. Read this drawing with all Architect's, Service Engineer's and CampbellReith's relevant details, specifications and drawings.
4. All work is to be done in accordance with the relevant specifications issued by CampbellReith, British Standard Codes of Practice, Statutory Requirements and the Contract Documents.
5. **Drawing status:**
P: Preliminary Evolving drawings for approvals, tenders, billings etc.
C: Construction Fully developed drawings issued under instructions for construction.
6. Only status C drawings to be used for construction.
7. Suitability code:
Work in progress
S0 - Work in progress
Shared (Non-contractual)
S1 - For coordination, **S2** - For information, **S3** - For internal review and comment, **S4** - For construction approval.
Documentation (For contractors purposes)
D1 - For Costing, **D2** - For Tender, **D3** - For contractor design, **D4** - for manufacture/procurement.
Construction
A - For construction, **B** - For construction but with comments (i.e. areas in abeyance), **CR** - Construction Record (Final Construction ONLY. Any deviations to that which is on site is not the liability of CampbellReith)
8. For full drainage strategy refer to drawings 13591-CRH-XX-XX-DR-C-5050 and 13591-CRH-XX-XX-DR-C-5051.
9. For proposed finished levels refer to drawing 13591-CRH-XX-XX-DR-C-5200.
10. Refer to proposed catchment plan 13591-CRH-XX-XX-DR-C-5250 for details of overall site catchments.
11. This plan should be read with reference to proposed surface water drainage model 13591-CRH-XX-XX-CA-C-0007. Note: colour of ring around manhole indicates node at which area of same colour enters system in the Network model 13591-CRH-XX-XX-CA-C-0007.

LEGEND

- Site boundary (2.765 ha)
- Proposed surface water sewer
- Linear drainage channel
- Surface water manhole
- Surface water inspection chamber
- Rodding eye
- Rainwater pipe
- Surface water gully
- Permeable paving
- Swale
- Attenuation basin
- Gabion basket headwall
- Precast headwall
- Sub-catchment area
*Refer to note 11

TOTAL impermeable area draining to surface water network = 0.574 ha

Rev	Description	Date	By
P2	Minor updates to match proposed drainage	04.05.22	JA
P1	Issued for Information	08.04.22	JA

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Job Title	Central Arun Crematorium
Client	Westerleigh

Proposed Surface Water Drainage Sub-Catchment Plan

Drawn by	Date made	Scale @ A1	Checked by	Suitability	CR Project
JA	April'22	1:500	AJH	S2	13591

Project No.	Originator	Volume	Lvl/Loc	Type	Role	Number	Rev
13591	CRH	XX	XX	DR	C	5260	P2