

Appendix L

Hydraulic Calculations



Woods Hardwick
Architecture | Engineering | Planning | Surveying

Woods Hardwick		Page 1
15-17 Goldington Road Bedford MK40 3NH	Oakleigh Farm Codicote Road Greenfield Runoff Rates	
Date 11/06/2024 13:18 File	Designed by ShD Checked by	
Micro Drainage		Source Control 2018.1.1
ICP SUDS Mean Annual Flood Input Return Period (years) 100 Soil 0.300 Area (ha) 0.470 Urban 0.000 SAAR (mm) 645 Region Number Region 5 Results 1/s QBAR Rural 0.8 QBAR Urban 0.8 Q100 years 2.8 Q1 year 0.7 Q30 years 1.9 Q100 years 2.8		
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Woods Hardwick		Page 1
15-17 Goldington Road Bedford MK40 3NH	Oakleigh Farm Codicote Road Brownfield Runoff Rates	
Date 11/06/2024 13:20 File	Designed by ShD Checked by	
Micro Drainage		Source Control 2018.1.1
ICP SUDS Mean Annual Flood Input Return Period (years) 100 Soil 0.300 Area (ha) 0.470 Urban 0.230 SAAR (mm) 645 Region Number Region 5 Results 1/s QBAR Rural 0.8 QBAR Urban 1.2 Q100 years 3.5 Q1 year 1.1 Q30 years 2.6 Q100 years 3.5		
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Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S1	0.003	5.00	84.808	1	522313.201	217680.908	0.680
S101	0.010	5.00	84.493	1	522314.773	217675.204	0.680
S102	0.005	5.00	84.081	1	522309.935	217671.640	0.680
S103	0.005	5.00	83.776	1	522304.919	217668.347	0.680
S104	0.004	5.00	83.487	1	522300.281	217664.480	0.680
S105	0.003	5.00	83.181	1	522295.584	217660.110	0.680
S106	0.004	5.00	82.878	1	522292.351	217654.668	0.680
S107	0.003	5.00	82.565	1	522290.188	217648.667	0.680
S108	0.003	5.00	82.269	1	522290.307	217642.326	0.680
S109	0.003	5.00	81.944	1	522291.937	217635.739	0.680
S110	0.003	5.00	81.650	1	522296.336	217630.981	0.690
S111	0.003	5.00	81.345	1	522300.769	217627.259	0.680
S112	0.003	5.00	81.017	1	522304.089	217622.605	0.680
S113	0.005	5.00	80.482	1	522309.055	217615.020	1.402
S114			80.300	1	522310.575	217613.097	1.320

7.000

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	S1	S101	5.000	0.600	84.128	83.813	0.315	15.9	100	5.04	50.0
1.001	S101	S102	5.000	0.600	83.813	83.401	0.412	12.1	100	5.08	50.0
1.002	S102	S103	5.000	0.600	83.401	83.096	0.305	16.4	100	5.12	50.0
1.003	S103	S104	5.000	0.600	83.096	82.807	0.289	17.3	100	5.17	50.0
1.004	S104	S105	5.000	0.600	82.807	82.501	0.306	16.3	100	5.21	50.0
1.005	S105	S106	5.000	0.600	82.501	82.198	0.303	16.5	100	5.26	50.0
1.006	S106	S107	5.000	0.600	82.198	81.885	0.313	16.0	100	5.30	50.0
1.007	S107	S108	5.000	0.600	81.885	81.589	0.296	16.9	100	5.34	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.948	15.3	0.4	0.580	0.580	0.003	0.0	11	0.831
1.001	2.230	17.5	1.8	0.580	0.580	0.013	0.0	21	1.429
1.002	1.917	15.1	2.4	0.580	0.580	0.018	0.0	27	1.402
1.003	1.866	14.7	3.1	0.580	0.580	0.023	0.0	32	1.491
1.004	1.920	15.1	3.7	0.580	0.580	0.027	0.0	33	1.575
1.005	1.911	15.0	4.1	0.580	0.580	0.030	0.0	36	1.625
1.006	1.942	15.3	4.6	0.580	0.580	0.034	0.0	38	1.707
1.007	1.888	14.8	5.0	0.580	0.580	0.037	0.0	40	1.710

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.008	S108	S109	5.000	0.600	81.589	81.264	0.325	15.4	100	5.38	50.0
1.009	S109	S110	5.000	0.600	81.264	80.960	0.304	16.4	100	5.43	50.0
1.010	S110	S111	5.000	0.600	80.960	80.665	0.295	16.9	100	5.47	50.0
1.011	S111	S112	5.000	0.600	80.665	80.337	0.328	15.2	100	5.51	50.0
1.012	S112	S113	5.000	0.600	80.337	79.480	0.857	5.8	100	5.54	50.0
1.013	S113	S114	5.000	0.600	79.080	78.980	0.100	50.0	100	5.62	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.008	1.979	15.5	5.4	0.580	0.580	0.040	0.0	41	1.809
1.009	1.914	15.0	5.8	0.580	0.590	0.043	0.0	43	1.796
1.010	1.885	14.8	6.2	0.590	0.580	0.046	0.0	45	1.798
1.011	1.988	15.6	6.6	0.580	0.580	0.049	0.0	46	1.912
1.012	3.222	25.3	7.0	0.580	0.902	0.052	0.0	36	2.772
1.013	1.092	8.6	7.7	1.302	1.220	0.057	0.0	75	1.236

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	5.000	15.9	100	Circular_Default Sewer Type	84.808	84.128	0.580	84.493	83.813	0.580
1.001	5.000	12.1	100	Circular_Default Sewer Type	84.493	83.813	0.580	84.081	83.401	0.580
1.002	5.000	16.4	100	Circular_Default Sewer Type	84.081	83.401	0.580	83.776	83.096	0.580
1.003	5.000	17.3	100	Circular_Default Sewer Type	83.776	83.096	0.580	83.487	82.807	0.580
1.004	5.000	16.3	100	Circular_Default Sewer Type	83.487	82.807	0.580	83.181	82.501	0.580
1.005	5.000	16.5	100	Circular_Default Sewer Type	83.181	82.501	0.580	82.878	82.198	0.580
1.006	5.000	16.0	100	Circular_Default Sewer Type	82.878	82.198	0.580	82.565	81.885	0.580
1.007	5.000	16.9	100	Circular_Default Sewer Type	82.565	81.885	0.580	82.269	81.589	0.580
1.008	5.000	15.4	100	Circular_Default Sewer Type	82.269	81.589	0.580	81.944	81.264	0.580
1.009	5.000	16.4	100	Circular_Default Sewer Type	81.944	81.264	0.580	81.650	80.960	0.590
1.010	5.000	16.9	100	Circular_Default Sewer Type	81.650	80.960	0.590	81.345	80.665	0.580
1.011	5.000	15.2	100	Circular_Default Sewer Type	81.345	80.665	0.580	81.017	80.337	0.580
1.012	5.000	5.8	100	Circular_Default Sewer Type	81.017	80.337	0.580	80.482	79.480	0.902
1.013	5.000	50.0	100	Circular_Default Sewer Type	80.482	79.080	1.302	80.300	78.980	1.220

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S1	1	Manhole	Adoptable	S101	1	Manhole	Adoptable
1.001	S101	1	Manhole	Adoptable	S102	1	Manhole	Adoptable
1.002	S102	1	Manhole	Adoptable	S103	1	Manhole	Adoptable
1.003	S103	1	Manhole	Adoptable	S104	1	Manhole	Adoptable
1.004	S104	1	Manhole	Adoptable	S105	1	Manhole	Adoptable
1.005	S105	1	Manhole	Adoptable	S106	1	Manhole	Adoptable
1.006	S106	1	Manhole	Adoptable	S107	1	Manhole	Adoptable
1.007	S107	1	Manhole	Adoptable	S108	1	Manhole	Adoptable
1.008	S108	1	Manhole	Adoptable	S109	1	Manhole	Adoptable
1.009	S109	1	Manhole	Adoptable	S110	1	Manhole	Adoptable
1.010	S110	1	Manhole	Adoptable	S111	1	Manhole	Adoptable
1.011	S111	1	Manhole	Adoptable	S112	1	Manhole	Adoptable
1.012	S112	1	Manhole	Adoptable	S113	1	Manhole	Adoptable
1.013	S113	1	Manhole	Adoptable	S114	1	Manhole	Adoptable

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
10	0	0	0
30	0	0	0
100	40	0	0

Node S113 Online Weir Control

Flap Valve	x	Design Depth (m)	0.630	Discharge Coefficient	0.590
Replaces Downstream Link	✓	Design Flow (l/s)			
Invert Level (m)	80.481	Width (m)	0.200		

Node S1 Online Orifice Control

Flap Valve	x	Invert Level (m)	84.128	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.100		

Node S101 Online Orifice Control

Flap Valve	x	Invert Level (m)	83.813	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.100		

Node S102 Online Orifice Control

Flap Valve	x	Invert Level (m)	83.401	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.100		

Node S103 Online Orifice Control

Flap Valve	x	Invert Level (m)	83.096	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.100		

Node S104 Online Orifice Control

Flap Valve	x	Invert Level (m)	82.807	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.100		

Node S105 Online Orifice Control

Flap Valve	x	Invert Level (m)	82.501	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.100		

Node S106 Online Orifice Control

Flap Valve	x	Invert Level (m)	82.198	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.100		

Node S107 Online Orifice Control

Flap Valve	x	Invert Level (m)	81.885	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.100		

Node S108 Online Orifice Control

Flap Valve	x	Invert Level (m)	81.589	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.100		

Node S109 Online Orifice Control

Flap Valve	x	Invert Level (m)	81.264	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.100		

Node S110 Online Orifice Control

Flap Valve	x	Invert Level (m)	80.960	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.100		

Node S111 Online Orifice Control

Flap Valve	x	Invert Level (m)	80.665	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.100		

Node S112 Online Orifice Control

Flap Valve	x	Invert Level (m)	80.337	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.100		

Node S1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.13500	Invert Level (m)	84.128	Slope (1:X)	20.0
Side Inf Coefficient (m/hr)	0.13500	Time to half empty (mins)	0	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	5.000		

Node S101 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.13500	Invert Level (m)	83.813	Slope (1:X)	12.0
Side Inf Coefficient (m/hr)	0.13500	Time to half empty (mins)	1	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	16.000		

Node S102 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.13500	Invert Level (m)	83.401	Slope (1:X)	16.0
Side Inf Coefficient (m/hr)	0.13500	Time to half empty (mins)	2	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	7.500		

Node S103 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.13500	Invert Level (m)	83.096	Slope (1:X)	16.0
Side Inf Coefficient (m/hr)	0.13500	Time to half empty (mins)	4	Depth (m)	0.450
Safety Factor	2.0	Width (m)	3.000	Inf Depth (m)	
Porosity	0.30	Length (m)	13.000		

Node S104 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.03200	Invert Level (m)	82.807	Slope (1:X)	17.0
Side Inf Coefficient (m/hr)	0.03200	Time to half empty (mins)	4	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	6.200		

Node S105 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.03200	Invert Level (m)	82.501	Slope (1:X)	16.0
Side Inf Coefficient (m/hr)	0.03200	Time to half empty (mins)	6	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	4.000		

Node S106 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.03200	Invert Level (m)	82.198	Slope (1:X)	16.0
Side Inf Coefficient (m/hr)	0.03200	Time to half empty (mins)	5	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	5.000		

Node S107 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.03200	Invert Level (m)	81.885	Slope (1:X)	16.0
Side Inf Coefficient (m/hr)	0.03200	Time to half empty (mins)	6	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	4.000		

Node S108 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.03200	Invert Level (m)	81.589	Slope (1:X)	16.0
Side Inf Coefficient (m/hr)	0.03200	Time to half empty (mins)	7	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	4.000		

Node S109 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.03200	Invert Level (m)	81.264	Slope (1:X)	16.0
Side Inf Coefficient (m/hr)	0.03200	Time to half empty (mins)	7	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	4.000		

Node S110 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.03200	Invert Level (m)	80.960	Slope (1:X)	16.0
Side Inf Coefficient (m/hr)	0.03200	Time to half empty (mins)	7	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	4.000		

Node S111 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.03200	Invert Level (m)	80.665	Slope (1:X)	16.0
Side Inf Coefficient (m/hr)	0.03200	Time to half empty (mins)	7	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	4.000		



Node S112 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.03200	Invert Level (m)	80.337	Slope (1:X)	10.0
Side Inf Coefficient (m/hr)	0.03200	Time to half empty (mins)	7	Depth (m)	0.450
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	4.000		

Node S113 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.03200	Invert Level (m)	79.080	Slope (1:X)	37.0
Side Inf Coefficient (m/hr)	0.03200	Time to half empty (mins)	200	Depth (m)	
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	7.000		

Node S113 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.03200	Safety Factor	2.0	Invert Level (m)	79.080
Side Inf Coefficient (m/hr)	0.03200	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	72.0	72.0	0.400	72.0	89.6	0.401	0.0	89.6

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	11	84.149	0.021	0.5	0.0107	0.0000	OK
15 minute summer	S101	10	83.873	0.060	2.3	0.0341	0.0000	OK
15 minute summer	S102	11	83.473	0.072	3.0	0.0766	0.0000	OK
15 minute summer	S103	11	83.180	0.084	3.7	0.0484	0.0000	OK
15 minute summer	S104	11	82.900	0.093	4.3	0.1287	0.0000	OK
15 minute summer	S105	12	82.599	0.098	4.7	0.1310	0.0000	OK
15 minute summer	S106	12	82.304	0.106	5.1	0.1556	0.0000	SURCHARGED
15 minute summer	S107	13	81.996	0.110	5.3	0.1649	0.0000	SURCHARGED
15 minute summer	S108	13	81.703	0.114	5.5	0.1760	0.0000	SURCHARGED
15 minute summer	S109	14	81.382	0.118	5.6	0.1857	0.0000	SURCHARGED
15 minute summer	S110	14	81.079	0.119	5.6	0.1906	0.0000	SURCHARGED
15 minute summer	S111	15	80.786	0.121	5.7	0.1955	0.0000	SURCHARGED
15 minute summer	S112	15	80.460	0.123	5.7	0.1348	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Discharge Vol (m³)
15 minute summer	S1	Orifice	S101	0.5	
15 minute summer	S1	Infiltration		0.0	
15 minute summer	S101	Orifice	S102	2.1	
15 minute summer	S101	Infiltration		0.1	
15 minute summer	S102	Orifice	S103	2.8	
15 minute summer	S102	Infiltration		0.1	
15 minute summer	S103	Orifice	S104	3.6	
15 minute summer	S103	Infiltration		0.1	
15 minute summer	S104	Orifice	S105	4.2	
15 minute summer	S104	Infiltration		0.0	
15 minute summer	S105	Orifice	S106	4.5	
15 minute summer	S105	Infiltration		0.0	
15 minute summer	S106	Orifice	S107	4.9	
15 minute summer	S106	Infiltration		0.0	
15 minute summer	S107	Orifice	S108	5.1	
15 minute summer	S107	Infiltration		0.0	
15 minute summer	S108	Orifice	S109	5.3	
15 minute summer	S108	Infiltration		0.0	
15 minute summer	S109	Orifice	S110	5.4	
15 minute summer	S109	Infiltration		0.0	
15 minute summer	S110	Orifice	S111	5.5	
15 minute summer	S110	Infiltration		0.0	
15 minute summer	S111	Orifice	S112	5.6	
15 minute summer	S111	Infiltration		0.0	
15 minute summer	S112	Orifice	S113	5.6	



Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	S113	256	79.180	0.100	1.4	7.1307	0.0000	OK
15 minute summer	S114	1	78.980	0.000	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Discharge Vol (m³)
15 minute summer	S112	Infiltration		0.0	
360 minute winter	S113	Weir	S114	0.0	0.0
360 minute winter	S113	Infiltration		0.1	
360 minute winter	S113	Infiltration		0.3	

Results for 10 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	10	84.163	0.035	1.1	0.0252	0.0000	OK
15 minute summer	S101	10	83.909	0.096	4.6	0.0655	0.0000	OK
15 minute summer	S102	11	83.525	0.124	6.2	0.2070	0.0000	SURCHARGED
15 minute summer	S103	11	83.259	0.163	7.4	0.1447	0.0000	SURCHARGED
15 minute summer	S104	13	82.985	0.178	8.4	0.4392	0.0000	SURCHARGED
15 minute summer	S105	13	82.683	0.182	8.3	0.4239	0.0000	SURCHARGED
15 minute summer	S106	14	82.388	0.190	8.4	0.4681	0.0000	SURCHARGED
15 minute summer	S107	15	82.074	0.189	8.2	0.4582	0.0000	SURCHARGED
15 minute winter	S108	16	81.778	0.189	8.1	0.4555	0.0000	SURCHARGED
30 minute summer	S109	25	81.453	0.189	8.0	0.4585	0.0000	SURCHARGED
30 minute summer	S110	26	81.151	0.191	8.0	0.4645	0.0000	SURCHARGED
30 minute summer	S111	27	80.856	0.191	8.0	0.4679	0.0000	SURCHARGED
30 minute summer	S112	27	80.531	0.194	8.0	0.3135	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Discharge Vol (m³)
15 minute summer	S1	Orifice	S101	1.0	
15 minute summer	S1	Infiltration		0.1	
15 minute summer	S101	Orifice	S102	4.4	
15 minute summer	S101	Infiltration		0.1	
15 minute summer	S102	Orifice	S103	5.7	
15 minute summer	S102	Infiltration		0.2	
15 minute summer	S103	Orifice	S104	7.0	
15 minute summer	S103	Infiltration		0.2	
15 minute summer	S104	Orifice	S105	7.5	
15 minute summer	S104	Infiltration		0.1	
15 minute summer	S105	Orifice	S106	7.6	
15 minute summer	S105	Infiltration		0.1	
15 minute summer	S106	Orifice	S107	7.8	
15 minute summer	S106	Infiltration		0.1	
15 minute summer	S107	Orifice	S108	7.8	
15 minute summer	S107	Infiltration		0.1	
15 minute winter	S108	Orifice	S109	7.8	
15 minute winter	S108	Infiltration		0.1	
30 minute summer	S109	Orifice	S110	7.8	
30 minute summer	S109	Infiltration		0.1	
30 minute summer	S110	Orifice	S111	7.8	
30 minute summer	S110	Infiltration		0.1	
30 minute summer	S111	Orifice	S112	7.8	
30 minute summer	S111	Infiltration		0.1	
30 minute summer	S112	Orifice	S113	7.9	

Results for 10 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute summer	S113	156	79.272	0.192	6.2	14.1523	0.0000	SURCHARGED
15 minute summer	S114	1	78.980	0.000	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Discharge Vol (m³)
30 minute summer	S112	Infiltration		0.1	
180 minute summer	S113	Weir	S114	0.0	0.0
180 minute summer	S113	Infiltration		0.2	
180 minute summer	S113	Infiltration		0.4	

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	10	84.170	0.042	1.4	0.0339	0.0000	OK
15 minute summer	S101	11	83.937	0.124	6.0	0.0948	0.0000	SURCHARGED
15 minute summer	S102	12	83.566	0.165	8.0	0.3503	0.0000	SURCHARGED
15 minute summer	S103	12	83.319	0.223	9.2	0.2504	0.0000	SURCHARGED
15 minute summer	S104	13	83.038	0.231	10.3	0.7202	0.0000	SURCHARGED
15 minute summer	S105	14	82.727	0.226	9.7	0.6450	0.0000	SURCHARGED
15 minute summer	S106	16	82.428	0.230	9.7	0.6785	0.0000	SURCHARGED
30 minute summer	S107	25	82.114	0.229	9.3	0.6601	0.0000	SURCHARGED
30 minute summer	S108	26	81.817	0.228	9.1	0.6580	0.0000	SURCHARGED
30 minute summer	S109	28	81.492	0.228	9.0	0.6553	0.0000	SURCHARGED
30 minute summer	S110	29	81.188	0.228	9.0	0.6551	0.0000	SURCHARGED
30 minute summer	S111	30	80.893	0.228	9.0	0.6550	0.0000	SURCHARGED
30 minute winter	S112	30	80.568	0.231	9.0	0.4381	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Discharge Vol (m³)
15 minute summer	S1	Orifice	S101	1.3	
15 minute summer	S1	Infiltration		0.1	
15 minute summer	S101	Orifice	S102	5.7	
15 minute summer	S101	Infiltration		0.2	
15 minute summer	S102	Orifice	S103	7.1	
15 minute summer	S102	Infiltration		0.3	
15 minute summer	S103	Orifice	S104	8.7	
15 minute summer	S103	Infiltration		0.2	
15 minute summer	S104	Orifice	S105	8.9	
15 minute summer	S104	Infiltration		0.1	
15 minute summer	S105	Orifice	S106	8.8	
15 minute summer	S105	Infiltration		0.1	
15 minute summer	S106	Orifice	S107	8.9	
15 minute summer	S106	Infiltration		0.1	
30 minute summer	S107	Orifice	S108	8.8	
30 minute summer	S107	Infiltration		0.1	
30 minute summer	S108	Orifice	S109	8.8	
30 minute summer	S108	Infiltration		0.1	
30 minute summer	S109	Orifice	S110	8.8	
30 minute summer	S109	Infiltration		0.1	
30 minute summer	S110	Orifice	S111	8.8	
30 minute summer	S110	Infiltration		0.1	
30 minute summer	S111	Orifice	S112	8.8	
30 minute summer	S111	Infiltration		0.1	
30 minute winter	S112	Orifice	S113	8.9	

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	S113	176	79.347	0.267	5.2	20.1218	0.0000	SURCHARGED
15 minute summer	S114	1	78.980	0.000	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Discharge Vol (m³)
30 minute winter	S112	Infiltration		0.1	
180 minute winter	S113	Weir	S114	0.0	0.0
180 minute winter	S113	Infiltration		0.2	
180 minute winter	S113	Infiltration		0.4	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	10	84.191	0.063	2.6	0.0711	0.0000	OK
15 minute summer	S101	11	84.087	0.274	10.8	0.3327	0.0000	SURCHARGED
15 minute summer	S102	13	83.719	0.318	14.0	1.2289	0.0000	SURCHARGED
15 minute summer	S103	13	83.485	0.389	14.0	0.6911	0.0000	FLOOD RISK
30 minute summer	S104	23	83.166	0.359	14.4	1.7056	0.0000	SURCHARGED
30 minute summer	S105	25	82.855	0.354	12.8	1.4198	0.0000	SURCHARGED
30 minute summer	S106	28	82.551	0.353	12.7	1.5348	0.0000	SURCHARGED
30 minute summer	S107	30	82.237	0.352	12.1	1.4043	0.0000	SURCHARGED
30 minute winter	S108	31	81.938	0.349	11.8	1.3862	0.0000	SURCHARGED
30 minute winter	S109	33	81.610	0.346	11.7	1.3664	0.0000	SURCHARGED
30 minute winter	S110	34	81.301	0.341	11.6	1.3403	0.0000	SURCHARGED
60 minute summer	S111	53	81.005	0.340	11.5	1.3317	0.0000	SURCHARGED
60 minute summer	S112	55	80.680	0.343	11.4	0.9310	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Discharge Vol (m³)
15 minute summer	S1	Orifice	S101	2.4	
15 minute summer	S1	Infiltration		0.1	
15 minute summer	S101	Orifice	S102	9.9	
15 minute summer	S101	Infiltration		0.4	
15 minute summer	S102	Orifice	S103	10.1	
15 minute summer	S102	Infiltration		0.5	
15 minute summer	S103	Orifice	S104	12.1	
15 minute summer	S103	Infiltration		0.4	
30 minute summer	S104	Orifice	S105	11.6	
30 minute summer	S104	Infiltration		0.2	
30 minute summer	S105	Orifice	S106	11.5	
30 minute summer	S105	Infiltration		0.1	
30 minute summer	S106	Orifice	S107	11.5	
30 minute summer	S106	Infiltration		0.1	
30 minute summer	S107	Orifice	S108	11.5	
30 minute summer	S107	Infiltration		0.1	
30 minute winter	S108	Orifice	S109	11.4	
30 minute winter	S108	Infiltration		0.1	
30 minute winter	S109	Orifice	S110	11.4	
30 minute winter	S109	Infiltration		0.1	
30 minute winter	S110	Orifice	S111	11.3	
30 minute winter	S110	Infiltration		0.1	
60 minute summer	S111	Orifice	S112	11.2	
60 minute summer	S111	Infiltration		0.1	
60 minute summer	S112	Orifice	S113	11.3	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	S113	344	80.353	1.273	5.4	39.8638	0.0000	FLOOD RISK
15 minute summer	S114	1	78.980	0.000	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Discharge Vol (m³)
60 minute summer	S112	Infiltration		0.1	
360 minute winter	S113	Weir	S114	0.0	0.0
360 minute winter	S113	Infiltration		0.3	
360 minute winter	S113	Infiltration		0.4	



Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S100	0.014	5.00	78.528	1200	522326.196	217591.607	2.280
S101	0.020	5.00	77.604	1200	522331.853	217578.141	1.648
S102	0.012	5.00	76.824	1200	522356.704	217543.507	1.675
S103			76.738	1200	522362.511	217535.429	2.038
S104			76.300	1200	522356.305	217531.645	1.850

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	S100	S101	14.606	0.600	76.248	75.956	0.292	50.0	150	5.17	50.0
1.001	S101	S102	42.627	0.600	75.956	75.149	0.807	52.8	150	5.68	50.0
1.002	S102	S103	9.949	0.600	75.149	74.950	0.199	50.0	150	5.80	50.0
1.003	S103	S104	5.000	0.600	74.700	74.450	0.250	20.0	150	5.84	49.8

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.426	25.2	1.9	2.130	1.498	0.014	0.0	28	0.841
1.001	1.387	24.5	4.6	1.498	1.525	0.034	0.0	44	1.070
1.002	1.426	25.2	6.2	1.525	1.638	0.046	0.0	51	1.184
1.003	2.262	40.0	6.2	1.888	1.700	0.046	0.0	40	1.656

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	14.606	50.0	150	Circular_Default Sewer Type	78.528	76.248	2.130	77.604	75.956	1.498
1.001	42.627	52.8	150	Circular_Default Sewer Type	77.604	75.956	1.498	76.824	75.149	1.525
1.002	9.949	50.0	150	Circular_Default Sewer Type	76.824	75.149	1.525	76.738	74.950	1.638
1.003	5.000	20.0	150	Circular_Default Sewer Type	76.738	74.700	1.888	76.300	74.450	1.700

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S100	1200	Manhole	Adoptable	S101	1200	Manhole	Adoptable
1.001	S101	1200	Manhole	Adoptable	S102	1200	Manhole	Adoptable
1.002	S102	1200	Manhole	Adoptable	S103	1200	Manhole	Adoptable
1.003	S103	1200	Manhole	Adoptable	S104	1200	Manhole	Adoptable



Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
10	0	0	0
30	0	0	0
100	40	0	0

Node S103 Online Weir Control

Flap Valve	x	Invert Level (m)	76.737	Discharge Coefficient	0.590
Replaces Downstream Link	✓	Width (m)	0.100		

Node S103 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.05700	Safety Factor	2.0	Invert Level (m)	74.700
Side Inf Coefficient (m/hr)	0.05700	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	72.0	72.0	0.400	72.0	93.6	0.401	0.0	93.6



Results for 2 year Critical Storm Duration. Lowest mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S100	10	76.280	0.032	2.5	0.0397	0.0000	OK
15 minute summer	S101	10	76.006	0.050	6.0	0.0681	0.0000	OK
15 minute summer	S102	11	75.210	0.061	7.9	0.0776	0.0000	OK
240 minute summer	S103	168	74.787	0.087	2.7	6.0670	0.0000	OK
15 minute summer	S104	1	74.450	0.000	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S100	1.000	S101	2.5	0.638	0.097	0.0568	
15 minute summer	S101	1.001	S102	5.8	0.994	0.235	0.2509	
15 minute summer	S102	1.002	S103	7.9	1.216	0.312	0.0643	
240 minute summer	S103	Weir	S104	0.0				0.0
240 minute summer	S103	Infiltration		0.6				

Results for 10 year Critical Storm Duration. Lowest mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S100	10	76.293	0.045	5.0	0.0566	0.0000	OK
15 minute summer	S101	10	76.030	0.074	12.1	0.1011	0.0000	OK
15 minute summer	S102	11	75.244	0.095	16.2	0.1214	0.0000	OK
240 minute summer	S103	196	74.867	0.167	4.5	11.5941	0.0000	SURCHARGED
15 minute summer	S104	1	74.450	0.000	0.0	0.0000	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S100	1.000	S101	5.0	0.766	0.197	0.0953	
15 minute summer	S101	1.001	S102	11.9	1.171	0.484	0.4334	
15 minute summer	S102	1.002	S103	16.1	1.434	0.637	0.1113	
240 minute summer	S103	Weir	S104	0.0				0.0
240 minute summer	S103	Infiltration		0.6				

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S100	10	76.300	0.052	6.6	0.0655	0.0000	OK
15 minute summer	S101	10	76.043	0.087	15.9	0.1198	0.0000	OK
15 minute summer	S102	11	75.268	0.119	21.3	0.1512	0.0000	OK
180 minute winter	S103	176	74.926	0.226	4.9	15.7301	0.0000	SURCHARGED
15 minute summer	S104	1	74.450	0.000	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S100	1.000	S101	6.6	0.818	0.260	0.1173	
15 minute summer	S101	1.001	S102	15.7	1.234	0.640	0.5429	
15 minute summer	S102	1.002	S103	21.2	1.502	0.840	0.1399	
180 minute winter	S103	Weir	S104	0.0				0.0
180 minute winter	S103	Infiltration		0.7				



Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S100	12	76.461	0.213	11.9	0.2676	0.0000	SURCHARGED
15 minute summer	S101	12	76.404	0.448	27.3	0.6150	0.0000	SURCHARGED
240 minute winter	S102	236	76.070	0.921	7.2	1.1728	0.0000	SURCHARGED
240 minute winter	S103	236	76.069	1.369	7.1	28.9429	0.0000	SURCHARGED
15 minute summer	S104	1	74.450	0.000	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S100	1.000	S101	11.1	0.899	0.442	0.2571	
15 minute summer	S101	1.001	S102	24.0	1.361	0.977	0.7504	
240 minute winter	S102	1.002	S103	7.1	1.187	0.283	0.1752	
240 minute winter	S103	Weir	S104	0.0				0.0
240 minute winter	S103	Infiltration		0.7				



Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S300	0.017	5.00	75.667	1200	522379.091	217501.781	2.468
S301	0.051	5.00	74.109	1200	522354.147	217488.081	1.859
S302			73.800	1	522324.089	217470.732	2.200
S303			73.500	1	522327.798	217464.573	1.972

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	S300	S301	28.459	0.600	73.199	72.250	0.949	30.0	150	5.26	50.0
1.001	S301	S302	5.000	0.600	72.250	71.600	0.650	7.7	150	5.28	50.0
1.002	S302	S303	5.000	0.600	71.600	71.528	0.072	69.4	150	5.35	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.845	32.6	2.3	2.318	1.709	0.017	0.0	27	1.061
1.001	3.655	64.6	9.2	1.709	2.050	0.068	0.0	38	2.611
1.002	1.208	21.3	9.2	2.050	1.822	0.068	0.0	69	1.164

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	28.459	30.0	150	Circular_Default Sewer Type	75.667	73.199	2.318	74.109	72.250	1.709
1.001	5.000	7.7	150	Circular_Default Sewer Type	74.109	72.250	1.709	73.800	71.600	2.050
1.002	5.000	69.4	150	Circular_Default Sewer Type	73.800	71.600	2.050	73.500	71.528	1.822

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S300	1200	Manhole	Adoptable	S301	1200	Manhole	Adoptable
1.001	S301	1200	Manhole	Adoptable	S302	1	Manhole	Adoptable
1.002	S302	1	Manhole	Adoptable	S303	1	Manhole	Adoptable

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
10	0	0	0
30	35	0	0
100	40	0	0

Node S302 Online Weir Control

Flap Valve	x	Invert Level (m)	73.790	Discharge Coefficient	0.590
Replaces Downstream Link	✓	Width (m)	0.100		

Node S302 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.13200	Safety Factor	2.0	Invert Level (m)	71.600
Side Inf Coefficient (m/hr)	0.13200	Porosity	0.95	Time to half empty (mins)	268

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	51.0	51.0	0.800	51.0	107.0	0.801	0.0	107.0



Results for 2 year Critical Storm Duration. Lowest mass balance: 99.74%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S300	10	73.230	0.031	3.0	0.0387	0.0000	OK
15 minute summer	S301	9	72.298	0.048	11.8	0.0814	0.0000	OK
180 minute summer	S302	124	71.752	0.152	4.7	7.3708	0.0000	SURCHARGED
15 minute summer	S303	1	71.528	0.000	0.0	0.0000	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S300	1.000	S301	2.9	0.844	0.090	0.1046	
15 minute summer	S301	1.001	S302	11.9	3.003	0.185	0.0308	
180 minute summer	S302	Weir	S303	0.0				0.0
180 minute summer	S302	Infiltration		1.1				



Results for 10 year Critical Storm Duration. Lowest mass balance: 99.74%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S300	10	73.243	0.044	6.1	0.0555	0.0000	OK
15 minute summer	S301	9	72.319	0.069	24.2	0.1162	0.0000	OK
180 minute summer	S302	132	71.907	0.307	8.0	14.8779	0.0000	SURCHARGED
15 minute summer	S303	1	71.528	0.000	0.0	0.0000	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S300	1.000	S301	6.0	1.048	0.185	0.1710	
15 minute summer	S301	1.001	S302	24.3	3.139	0.377	0.0592	
180 minute summer	S302	Weir	S303	0.0				0.0
180 minute summer	S302	Infiltration		1.3				

Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 99.74%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S300	10	73.258	0.059	10.8	0.0751	0.0000	OK
15 minute summer	S301	11	72.354	0.104	43.1	0.1744	0.0000	OK
180 minute winter	S302	164	72.197	0.597	9.6	28.9178	0.0000	SURCHARGED
15 minute summer	S303	1	71.528	0.000	0.0	0.0000	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S300	1.000	S301	10.7	1.107	0.329	0.2748	
15 minute summer	S301	1.001	S302	42.6	3.143	0.660	0.0765	
180 minute winter	S302	Weir	S303	0.0				0.0
180 minute winter	S302	Infiltration		1.7				



Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.74%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S300	10	73.269	0.070	14.5	0.0887	0.0000	OK
180 minute winter	S301	172	72.964	0.714	12.9	1.1988	0.0000	SURCHARGED
180 minute winter	S302	172	72.963	1.363	12.9	38.7842	0.0000	SURCHARGED
15 minute summer	S303	1	71.528	0.000	0.0	0.0000	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S300	1.000	S301	14.4	1.079	0.442	0.3649	
180 minute winter	S301	1.001	S302	12.9	2.081	0.199	0.0880	
180 minute winter	S302	Weir	S303	0.0				0.0
180 minute winter	S302	Infiltration		2.0				



Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S400	0.017	5.00	74.872	1200	522297.406	217456.583	1.834
S401			74.660	1	522302.377	217459.473	2.560
S402			73.750	1	522325.817	217470.204	1.733

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	S400	S401	5.750	0.600	73.038	72.750	0.288	20.0	150	5.04	50.0
1.001	S401	S402	5.000	0.600	72.100	72.017	0.083	60.0	150	5.11	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	2.262	40.0	2.3	1.684	1.760	0.017	0.0	24	1.231
1.001	1.301	23.0	2.3	2.410	1.583	0.017	0.0	32	0.833

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	5.750	20.0	150	Circular_Default Sewer Type	74.872	73.038	1.684	74.660	72.750	1.760
1.001	5.000	60.0	150	Circular_Default Sewer Type	74.660	72.100	2.410	73.750	72.017	1.583

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S400	1200	Manhole	Adoptable	S401	1	Manhole	Adoptable
1.001	S401	1	Manhole	Adoptable	S402	1	Manhole	Adoptable

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
10	0	0	0
30	35	0	0
100	40	0	0

Node S402 Online Weir Control

Flap Valve	x	Invert Level (m)	73.745	Discharge Coefficient	0.590
Replaces Downstream Link	✓	Width (m)	0.100		

Node S402 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.13200	Safety Factor	2.0	Invert Level (m)	72.100
Side Inf Coefficient (m/hr)	0.13200	Porosity	0.95	Time to half empty (mins)	280

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	12.0	12.0	0.800	12.0	24.8	0.801	0.0	24.8



Results for 2 year Critical Storm Duration. Lowest mass balance: 93.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S400	10	73.067	0.029	3.0	0.0382	0.0000	OK
240 minute summer	S401	164	72.248	0.148	1.0	0.0000	0.0000	OK
240 minute summer	S402	164	72.248	0.231	1.0	1.6948	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S400	1.000	S401	3.0	1.287	0.074	0.0133	
240 minute summer	S401	1.001	S402	1.0	0.152	0.045	0.0879	
240 minute summer	S402	Weir		0.0				0.0
240 minute summer	S402	Infiltration		0.3				

Results for 10 year Critical Storm Duration. Lowest mass balance: 93.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S400	10	73.080	0.042	6.1	0.0557	0.0000	OK
180 minute summer	S401	148	72.402	0.302	2.0	0.0000	0.0000	SURCHARGED
180 minute summer	S402	148	72.402	0.385	1.9	3.4511	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S400	1.000	S401	6.1	1.560	0.152	0.0223	
180 minute summer	S401	1.001	S402	1.9	0.320	0.081	0.0880	
180 minute summer	S402	Weir		0.0				0.0
180 minute summer	S402	Infiltration		0.3				

Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 93.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S400	10	73.097	0.058	10.8	0.0770	0.0000	OK
180 minute winter	S401	172	72.692	0.592	2.4	0.0000	0.0000	SURCHARGED
180 minute winter	S402	172	72.692	0.675	2.2	6.7551	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S400	1.000	S401	10.7	1.801	0.269	0.0343	
180 minute winter	S401	1.001	S402	2.2	0.469	0.097	0.0880	
180 minute winter	S402	Weir		0.0				0.0
180 minute winter	S402	Infiltration		0.4				

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 93.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S400	10	73.108	0.070	14.5	0.0920	0.0000	OK
180 minute winter	S401	172	73.106	1.006	3.2	0.0000	0.0000	SURCHARGED
180 minute winter	S402	172	73.106	1.089	3.0	9.1314	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S400	1.000	S401	14.4	1.930	0.361	0.0430	
180 minute winter	S401	1.001	S402	3.0	0.320	0.129	0.0880	
180 minute winter	S402	Weir		0.0				0.0
180 minute winter	S402	Infiltration		0.5				

Summary of Results for 30 year Return Period (+35%)

Half Drain Time : 49 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	82.358	0.222	1.1	3.7	O K
30 min Summer	82.383	0.247	1.2	4.6	O K
60 min Summer	82.395	0.259	1.2	5.0	O K
120 min Summer	82.405	0.269	1.3	5.4	O K
180 min Summer	82.401	0.265	1.3	5.3	O K
240 min Summer	82.393	0.257	1.2	4.9	O K
360 min Summer	82.373	0.237	1.1	4.2	O K
480 min Summer	82.354	0.218	1.0	3.6	O K
600 min Summer	82.338	0.202	1.0	3.1	O K
720 min Summer	82.323	0.187	0.9	2.6	O K
960 min Summer	82.300	0.164	0.8	2.0	O K
1440 min Summer	82.266	0.130	0.6	1.3	O K
2160 min Summer	82.236	0.100	0.5	0.7	O K
2880 min Summer	82.218	0.082	0.4	0.5	O K
4320 min Summer	82.197	0.061	0.3	0.3	O K
5760 min Summer	82.186	0.050	0.2	0.2	O K
7200 min Summer	82.182	0.046	0.2	0.2	O K
8640 min Summer	82.179	0.043	0.2	0.1	O K
10080 min Summer	82.177	0.041	0.2	0.1	O K
15 min Winter	82.359	0.223	1.1	3.7	O K
30 min Winter	82.384	0.248	1.2	4.6	O K
60 min Winter	82.394	0.258	1.2	5.0	O K
120 min Winter	82.400	0.264	1.3	5.2	O K
180 min Winter	82.391	0.255	1.2	4.9	O K
240 min Winter	82.379	0.243	1.2	4.4	O K
360 min Winter	82.352	0.216	1.0	3.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	110.014	0.0	17
30 min Summer	70.763	0.0	30
60 min Summer	43.453	0.0	46
120 min Summer	27.389	0.0	80
180 min Summer	20.415	0.0	116
240 min Summer	16.395	0.0	148
360 min Summer	11.848	0.0	214
480 min Summer	9.320	0.0	276
600 min Summer	7.708	0.0	338
720 min Summer	6.588	0.0	398
960 min Summer	5.127	0.0	520
1440 min Summer	3.599	0.0	752
2160 min Summer	2.542	0.0	1108
2880 min Summer	1.998	0.0	1472
4320 min Summer	1.444	0.0	2200
5760 min Summer	1.162	0.0	2896
7200 min Summer	0.991	0.0	3664
8640 min Summer	0.877	0.0	4296
10080 min Summer	0.795	0.0	4984
15 min Winter	110.014	0.0	17
30 min Winter	70.763	0.0	30
60 min Winter	43.453	0.0	48
120 min Winter	27.389	0.0	86
180 min Winter	20.415	0.0	124
240 min Winter	16.395	0.0	158
360 min Winter	11.848	0.0	224

Summary of Results for 30 year Return Period (+35%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
480 min Winter	82.329	0.193	0.9	2.8	O K
600 min Winter	82.309	0.173	0.8	2.2	O K
720 min Winter	82.292	0.156	0.7	1.8	O K
960 min Winter	82.265	0.129	0.6	1.2	O K
1440 min Winter	82.231	0.095	0.5	0.7	O K
2160 min Winter	82.205	0.069	0.3	0.4	O K
2880 min Winter	82.190	0.054	0.3	0.2	O K
4320 min Winter	82.180	0.044	0.2	0.1	O K
5760 min Winter	82.176	0.040	0.2	0.1	O K
7200 min Winter	82.172	0.036	0.1	0.1	O K
8640 min Winter	82.170	0.034	0.1	0.1	O K
10080 min Winter	82.168	0.032	0.1	0.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
480 min Winter	9.320	0.0	288
600 min Winter	7.708	0.0	348
720 min Winter	6.588	0.0	408
960 min Winter	5.127	0.0	528
1440 min Winter	3.599	0.0	764
2160 min Winter	2.542	0.0	1104
2880 min Winter	1.998	0.0	1468
4320 min Winter	1.444	0.0	2192
5760 min Winter	1.162	0.0	2896
7200 min Winter	0.991	0.0	3544
8640 min Winter	0.877	0.0	4336
10080 min Winter	0.795	0.0	5000

Woods Hardwick		Page 3
15-17 Goldington Road Bedford MK40 3NH	Oakleigh Meadows, Welwyn Road 2 Permeable Paving_A	
Date 12/07/2024 12:57 File ROAD 2 - PERMEABLE PAVING.SRCX	Designed by ShD Checked by	
Micro Drainage Source Control 2018.1.1		

Rainfall Details

Rainfall Model	FEH	Winter Storms	Yes
Return Period (years)	30	Cv (Summer)	1.000
FEH Rainfall Version	2013	Cv (Winter)	1.000
Site Location	GB 522310 217464 TL 22310 17464	Shortest Storm (mins)	15
Data Type	Point	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+35

Time Area Diagram

Total Area (ha) 0.019

Time (mins)	Area
From:	To: (ha)

0	4 0.019
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Woods Hardwick		Page 4
15-17 Goldington Road Bedford MK40 3NH	Oakleigh Meadows, Welwyn Road 2 Permeable Paving_A	
Date 12/07/2024 12:57	Designed by ShD	
File ROAD 2 - PERMEABLE PAVING.SRCX	Checked by	
Micro Drainage	Source Control 2018.1.1	

Model Details

Storage is Online Cover Level (m) 82.766

Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.06900	Width (m)	5.0
Membrane Percolation (mm/hr)	1000	Length (m)	37.5
Max Percolation (l/s)	52.1	Slope (1:X)	100.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	82.136	Membrane Depth (m)	0

Woods Hardwick				Page 1																																																																																																																																																																																																																			
15-17 Goldington Road Bedford MK40 3NH		Oakleigh Meadows, Welwyn Road 2 Permeable Paving_A																																																																																																																																																																																																																					
Date 11/06/2024 12:26 File ROAD 2 - PERMEABLE PAVI...		Designed by ShD Checked by																																																																																																																																																																																																																					
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Summary of Results for 100 year Return Period (+40%) Half Drain Time : 58 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>82.403</td><td>0.267</td><td>1.3</td><td>5.3</td><td>O K</td></tr><tr><td>30 min Summer</td><td>82.434</td><td>0.298</td><td>1.4</td><td>6.6</td><td>O K</td></tr><tr><td>60 min Summer</td><td>82.448</td><td>0.312</td><td>1.5</td><td>7.3</td><td>O K</td></tr><tr><td>120 min Summer</td><td>82.459</td><td>0.323</td><td>1.5</td><td>7.8</td><td>O K</td></tr><tr><td>180 min Summer</td><td>82.456</td><td>0.320</td><td>1.5</td><td>7.7</td><td>O K</td></tr><tr><td>240 min Summer</td><td>82.448</td><td>0.312</td><td>1.5</td><td>7.3</td><td>O K</td></tr><tr><td>360 min Summer</td><td>82.427</td><td>0.291</td><td>1.4</td><td>6.3</td><td>O K</td></tr><tr><td>480 min Summer</td><td>82.406</td><td>0.270</td><td>1.3</td><td>5.5</td><td>O K</td></tr><tr><td>600 min Summer</td><td>82.387</td><td>0.251</td><td>1.2</td><td>4.7</td><td>O K</td></tr><tr><td>720 min Summer</td><td>82.371</td><td>0.235</td><td>1.1</td><td>4.1</td><td>O K</td></tr><tr><td>960 min Summer</td><td>82.343</td><td>0.207</td><td>1.0</td><td>3.2</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>82.302</td><td>0.166</td><td>0.8</td><td>2.1</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>82.264</td><td>0.128</td><td>0.6</td><td>1.2</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>82.240</td><td>0.104</td><td>0.5</td><td>0.8</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>82.212</td><td>0.076</td><td>0.4</td><td>0.4</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>82.197</td><td>0.061</td><td>0.3</td><td>0.3</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>82.187</td><td>0.051</td><td>0.2</td><td>0.2</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>82.183</td><td>0.047</td><td>0.2</td><td>0.2</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>82.181</td><td>0.045</td><td>0.2</td><td>0.1</td><td>O K</td></tr><tr><td>15 min Winter</td><td>82.403</td><td>0.267</td><td>1.3</td><td>5.3</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>147.343</td><td>0.0</td><td>17</td></tr><tr><td>30 min Summer</td><td>95.484</td><td>0.0</td><td>31</td></tr><tr><td>60 min Summer</td><td>59.039</td><td>0.0</td><td>50</td></tr><tr><td>120 min Summer</td><td>36.906</td><td>0.0</td><td>82</td></tr><tr><td>180 min Summer</td><td>27.510</td><td>0.0</td><td>118</td></tr><tr><td>240 min Summer</td><td>22.111</td><td>0.0</td><td>150</td></tr><tr><td>360 min Summer</td><td>15.994</td><td>0.0</td><td>218</td></tr><tr><td>480 min Summer</td><td>12.579</td><td>0.0</td><td>280</td></tr><tr><td>600 min Summer</td><td>10.392</td><td>0.0</td><td>344</td></tr><tr><td>720 min Summer</td><td>8.868</td><td>0.0</td><td>404</td></tr><tr><td>960 min Summer</td><td>6.878</td><td>0.0</td><td>524</td></tr><tr><td>1440 min Summer</td><td>4.783</td><td>0.0</td><td>764</td></tr><tr><td>2160 min Summer</td><td>3.325</td><td>0.0</td><td>1124</td></tr><tr><td>2880 min Summer</td><td>2.578</td><td>0.0</td><td>1472</td></tr><tr><td>4320 min Summer</td><td>1.823</td><td>0.0</td><td>2204</td></tr><tr><td>5760 min Summer</td><td>1.440</td><td>0.0</td><td>2936</td></tr><tr><td>7200 min Summer</td><td>1.212</td><td>0.0</td><td>3632</td></tr><tr><td>8640 min Summer</td><td>1.060</td><td>0.0</td><td>4288</td></tr><tr><td>10080 min Summer</td><td>0.952</td><td>0.0</td><td>5024</td></tr><tr><td>15 min Winter</td><td>147.343</td><td>0.0</td><td>17</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	82.403	0.267	1.3	5.3	O K	30 min Summer	82.434	0.298	1.4	6.6	O K	60 min Summer	82.448	0.312	1.5	7.3	O K	120 min Summer	82.459	0.323	1.5	7.8	O K	180 min Summer	82.456	0.320	1.5	7.7	O K	240 min Summer	82.448	0.312	1.5	7.3	O K	360 min Summer	82.427	0.291	1.4	6.3	O K	480 min Summer	82.406	0.270	1.3	5.5	O K	600 min Summer	82.387	0.251	1.2	4.7	O K	720 min Summer	82.371	0.235	1.1	4.1	O K	960 min Summer	82.343	0.207	1.0	3.2	O K	1440 min Summer	82.302	0.166	0.8	2.1	O K	2160 min Summer	82.264	0.128	0.6	1.2	O K	2880 min Summer	82.240	0.104	0.5	0.8	O K	4320 min Summer	82.212	0.076	0.4	0.4	O K	5760 min Summer	82.197	0.061	0.3	0.3	O K	7200 min Summer	82.187	0.051	0.2	0.2	O K	8640 min Summer	82.183	0.047	0.2	0.2	O K	10080 min Summer	82.181	0.045	0.2	0.1	O K	15 min Winter	82.403	0.267	1.3	5.3	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	147.343	0.0	17	30 min Summer	95.484	0.0	31	60 min Summer	59.039	0.0	50	120 min Summer	36.906	0.0	82	180 min Summer	27.510	0.0	118	240 min Summer	22.111	0.0	150	360 min Summer	15.994	0.0	218	480 min Summer	12.579	0.0	280	600 min Summer	10.392	0.0	344	720 min Summer	8.868	0.0	404	960 min Summer	6.878	0.0	524	1440 min Summer	4.783	0.0	764	2160 min Summer	3.325	0.0	1124	2880 min Summer	2.578	0.0	1472	4320 min Summer	1.823	0.0	2204	5760 min Summer	1.440	0.0	2936	7200 min Summer	1.212	0.0	3632	8640 min Summer	1.060	0.0	4288	10080 min Summer	0.952	0.0	5024	15 min Winter	147.343	0.0	17
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15-17 Goldington Road Bedford MK40 3NH		Oakleigh Meadows, Welwyn Road 2 Permeable Paving_A			
Date 11/06/2024 12:26 File ROAD 2 - PERMEABLE PAVI...		Designed by ShD Checked by			
Micro Drainage		Source Control 2018.1.1			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	82.434	0.298	1.4	6.7	O K
60 min Winter	82.448	0.312	1.5	7.3	O K
120 min Winter	82.455	0.319	1.5	7.6	O K
180 min Winter	82.447	0.311	1.5	7.2	O K
240 min Winter	82.434	0.298	1.4	6.7	O K
360 min Winter	82.406	0.270	1.3	5.5	O K
480 min Winter	82.379	0.243	1.2	4.4	O K
600 min Winter	82.356	0.220	1.1	3.6	O K
720 min Winter	82.336	0.200	1.0	3.0	O K
960 min Winter	82.304	0.168	0.8	2.1	O K
1440 min Winter	82.261	0.125	0.6	1.2	O K
2160 min Winter	82.226	0.090	0.4	0.6	O K
2880 min Winter	82.206	0.070	0.3	0.4	O K
4320 min Winter	82.186	0.050	0.2	0.2	O K
5760 min Winter	82.180	0.044	0.2	0.1	O K
7200 min Winter	82.176	0.040	0.2	0.1	O K
8640 min Winter	82.174	0.038	0.1	0.1	O K
10080 min Winter	82.172	0.036	0.1	0.1	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	95.484	0.0	30		
60 min Winter	59.039	0.0	50		
120 min Winter	36.906	0.0	88		
180 min Winter	27.510	0.0	126		
240 min Winter	22.111	0.0	160		
360 min Winter	15.994	0.0	228		
480 min Winter	12.579	0.0	292		
600 min Winter	10.392	0.0	356		
720 min Winter	8.868	0.0	418		
960 min Winter	6.878	0.0	538		
1440 min Winter	4.783	0.0	766		
2160 min Winter	3.325	0.0	1124		
2880 min Winter	2.578	0.0	1472		
4320 min Winter	1.823	0.0	2144		
5760 min Winter	1.440	0.0	2936		
7200 min Winter	1.212	0.0	3536		
8640 min Winter	1.060	0.0	4360		
10080 min Winter	0.952	0.0	5136		
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15-17 Goldington Road Bedford MK40 3NH	Oakleigh Meadows, Welwyn Road 2 Permeable Paving_A	
Date 11/06/2024 12:26 File ROAD 2 - PERMEABLE PAVI...	Designed by ShD Checked by	
Micro Drainage		
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Woods Hardwick		Page 4																								
15-17 Goldington Road Bedford MK40 3NH	Oakleigh Meadows, Welwyn Road 2 Permeable Paving_A																									
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Micro Drainage																										
Source Control 2018.1.1																										
Model Details Storage is Online Cover Level (m) 82.766 Porous Car Park Structure <table><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.06900</td><td>Width (m)</td><td>5.0</td></tr><tr><td>Membrane Percolation (mm/hr)</td><td>1000</td><td>Length (m)</td><td>37.5</td></tr><tr><td>Max Percolation (l/s)</td><td>52.1</td><td>Slope (1:X)</td><td>100.0</td></tr><tr><td>Safety Factor</td><td>2.0</td><td>Depression Storage (mm)</td><td>5</td></tr><tr><td>Porosity</td><td>0.30</td><td>Evaporation (mm/day)</td><td>3</td></tr><tr><td>Invert Level (m)</td><td>82.136</td><td>Membrane Depth (m)</td><td>0</td></tr></table>			Infiltration Coefficient Base (m/hr)	0.06900	Width (m)	5.0	Membrane Percolation (mm/hr)	1000	Length (m)	37.5	Max Percolation (l/s)	52.1	Slope (1:X)	100.0	Safety Factor	2.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	82.136	Membrane Depth (m)	0
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15-17 Goldington Road Bedford MK40 3NH	19367 - OAKLEIGH ROAD 3 PERMEABLE PAVING	
Date 07/11/2023	Designed by ShD	
File ROAD 3 - PERMEABLE PAVING.SRCX	Checked by	
Micro Drainage Source Control 2018.1.1		

Summary of Results for 30 year Return Period (+35%)

Half Drain Time : 26 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m ³)	Status
15 min Summer	83.439	0.244	0.5	0.9	O K
30 min Summer	83.461	0.266	0.5	1.1	O K
60 min Summer	83.469	0.274	0.5	1.1	O K
120 min Summer	83.469	0.274	0.5	1.1	O K
180 min Summer	83.455	0.260	0.5	1.0	O K
240 min Summer	83.440	0.245	0.5	0.9	O K
360 min Summer	83.411	0.216	0.4	0.7	O K
480 min Summer	83.386	0.191	0.4	0.5	O K
600 min Summer	83.367	0.172	0.3	0.4	O K
720 min Summer	83.350	0.155	0.3	0.4	O K
960 min Summer	83.325	0.130	0.2	0.3	O K
1440 min Summer	83.293	0.098	0.2	0.1	O K
2160 min Summer	83.267	0.072	0.1	0.1	O K
2880 min Summer	83.252	0.057	0.1	0.0	O K
4320 min Summer	83.240	0.045	0.1	0.0	O K
5760 min Summer	83.236	0.041	0.1	0.0	O K
7200 min Summer	83.233	0.038	0.1	0.0	O K
8640 min Summer	83.230	0.035	0.0	0.0	O K
10080 min Summer	83.229	0.034	0.0	0.0	O K
15 min Winter	83.439	0.244	0.5	0.9	O K
30 min Winter	83.460	0.265	0.5	1.1	O K
60 min Winter	83.464	0.269	0.5	1.1	O K
120 min Winter	83.455	0.260	0.5	1.0	O K
180 min Winter	83.435	0.240	0.4	0.9	O K
240 min Winter	83.414	0.219	0.4	0.7	O K
360 min Winter	83.378	0.183	0.3	0.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Time-Peak (mins)
15 min Summer	110.014	0.0	16
30 min Summer	70.763	0.0	25
60 min Summer	43.453	0.0	42
120 min Summer	27.389	0.0	76
180 min Summer	20.415	0.0	108
240 min Summer	16.395	0.0	140
360 min Summer	11.848	0.0	202
480 min Summer	9.320	0.0	262
600 min Summer	7.708	0.0	322
720 min Summer	6.588	0.0	382
960 min Summer	5.127	0.0	500
1440 min Summer	3.599	0.0	736
2160 min Summer	2.542	0.0	1100
2880 min Summer	1.998	0.0	1468
4320 min Summer	1.444	0.0	2200
5760 min Summer	1.162	0.0	2856
7200 min Summer	0.991	0.0	3592
8640 min Summer	0.877	0.0	4328
10080 min Summer	0.795	0.0	5056
15 min Winter	110.014	0.0	16
30 min Winter	70.763	0.0	26
60 min Winter	43.453	0.0	44
120 min Winter	27.389	0.0	80
180 min Winter	20.415	0.0	114
240 min Winter	16.395	0.0	146
360 min Winter	11.848	0.0	208

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15-17 Goldington Road Bedford MK40 3NH	19367 - OAKLEIGH ROAD 3 PERMEABLE PAVING	
Date 07/11/2023 File ROAD 3 - PERMEABLE PAVING.SRCX	Designed by ShD Checked by	
Micro Drainage Source Control 2018.1.1		

Summary of Results for 30 year Return Period (+35%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
480 min Winter	83.350	0.155	0.3	0.4	O K
600 min Winter	83.328	0.133	0.2	0.3	O K
720 min Winter	83.312	0.117	0.2	0.2	O K
960 min Winter	83.288	0.093	0.2	0.1	O K
1440 min Winter	83.261	0.066	0.1	0.1	O K
2160 min Winter	83.243	0.048	0.1	0.0	O K
2880 min Winter	83.238	0.043	0.1	0.0	O K
4320 min Winter	83.231	0.036	0.0	0.0	O K
5760 min Winter	83.227	0.032	0.0	0.0	O K
7200 min Winter	83.225	0.030	0.0	0.0	O K
8640 min Winter	83.223	0.028	0.0	0.0	O K
10080 min Winter	83.222	0.027	0.0	0.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
480 min Winter	9.320	0.0	268
600 min Winter	7.708	0.0	326
720 min Winter	6.588	0.0	384
960 min Winter	5.127	0.0	502
1440 min Winter	3.599	0.0	736
2160 min Winter	2.542	0.0	1100
2880 min Winter	1.998	0.0	1464
4320 min Winter	1.444	0.0	2136
5760 min Winter	1.162	0.0	2936
7200 min Winter	0.991	0.0	3640
8640 min Winter	0.877	0.0	4336
10080 min Winter	0.795	0.0	4992

Woods Hardwick		Page 3
15-17 Goldington Road Bedford MK40 3NH	19367 - OAKLEIGH ROAD 3 PERMEABLE PAVING	
Date 07/11/2023 File ROAD 3 - PERMEABLE PAVING.SRCX	Designed by ShD Checked by	
Micro Drainage		
Source Control 2018.1.1		

Rainfall Details

Rainfall Model	FEH	Winter Storms	Yes
Return Period (years)	30	Cv (Summer)	1.000
FEH Rainfall Version	2013	Cv (Winter)	1.000
Site Location	GB 522310 217464 TL 22310 17464	Shortest Storm (mins)	15
Data Type	Point	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+35

Time Area Diagram

Total Area (ha) 0.005

Time (mins)		Area
From:	To:	(ha)
0	4	0.005

Woods Hardwick		Page 4
15-17 Goldington Road Bedford MK40 3NH	19367 - OAKLEIGH ROAD 3 PERMEABLE PAVING	
Date 07/11/2023 File ROAD 3 - PERMEABLE PAVING.SRCX	Designed by ShD Checked by	
Micro Drainage		
Source Control 2018.1.1		

Model Details

Storage is Online Cover Level (m) 83.825

Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.13500	Width (m)	5.0
Membrane Percolation (mm/hr)	1000	Length (m)	10.0
Max Percolation (l/s)	13.9	Slope (1:X)	20.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	83.195	Membrane Depth (m)	0

Woods Hardwick			Page 1		
15-17 Goldington Road Bedford MK40 3NH		19367 - OAKLEIGH ROAD 3 PERMEABLE PAVING			
Date 07/11/2023 File ROAD 3 - PERMEABLE PAVI...		Designed by ShD Checked by			
Micro Drainage		Source Control 2018.1.1			
Summary of Results for 100 year Return Period (+40%)					
Half Drain Time : 29 minutes.					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	83.489	0.294	0.6	1.3	O K
30 min Summer	83.516	0.321	0.6	1.5	O K
60 min Summer	83.527	0.332	0.6	1.6	Flood Risk
120 min Summer	83.527	0.332	0.6	1.6	Flood Risk
180 min Summer	83.513	0.318	0.6	1.5	O K
240 min Summer	83.496	0.301	0.6	1.4	O K
360 min Summer	83.465	0.270	0.5	1.1	O K
480 min Summer	83.437	0.242	0.5	0.9	O K
600 min Summer	83.414	0.219	0.4	0.7	O K
720 min Summer	83.394	0.199	0.4	0.6	O K
960 min Summer	83.363	0.168	0.3	0.4	O K
1440 min Summer	83.322	0.127	0.2	0.2	O K
2160 min Summer	83.288	0.093	0.2	0.1	O K
2880 min Summer	83.268	0.073	0.1	0.1	O K
4320 min Summer	83.247	0.052	0.1	0.0	O K
5760 min Summer	83.240	0.045	0.1	0.0	O K
7200 min Summer	83.237	0.042	0.1	0.0	O K
8640 min Summer	83.234	0.039	0.1	0.0	O K
10080 min Summer	83.232	0.037	0.1	0.0	O K
15 min Winter	83.489	0.294	0.6	1.3	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
15 min Summer	147.343	0.0	16		
30 min Summer	95.484	0.0	26		
60 min Summer	59.039	0.0	42		
120 min Summer	36.906	0.0	78		
180 min Summer	27.510	0.0	110		
240 min Summer	22.111	0.0	144		
360 min Summer	15.994	0.0	206		
480 min Summer	12.579	0.0	266		
600 min Summer	10.392	0.0	326		
720 min Summer	8.868	0.0	386		
960 min Summer	6.878	0.0	504		
1440 min Summer	4.783	0.0	738		
2160 min Summer	3.325	0.0	1100		
2880 min Summer	2.578	0.0	1468		
4320 min Summer	1.823	0.0	2168		
5760 min Summer	1.440	0.0	2856		
7200 min Summer	1.212	0.0	3664		
8640 min Summer	1.060	0.0	4360		
10080 min Summer	0.952	0.0	4968		
15 min Winter	147.343	0.0	16		
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Woods Hardwick					Page 2
15-17 Goldington Road Bedford MK40 3NH		19367 - OAKLEIGH ROAD 3 PERMEABLE PAVING			
Date 07/11/2023 File ROAD 3 - PERMEABLE PAVI...		Designed by ShD Checked by			
Micro Drainage		Source Control 2018.1.1			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	83.516	0.321	0.6	1.5	O K
60 min Winter	83.523	0.328	0.6	1.6	O K
120 min Winter	83.514	0.319	0.6	1.5	O K
180 min Winter	83.493	0.298	0.6	1.3	O K
240 min Winter	83.470	0.275	0.5	1.1	O K
360 min Winter	83.429	0.234	0.4	0.8	O K
480 min Winter	83.396	0.201	0.4	0.6	O K
600 min Winter	83.370	0.175	0.3	0.5	O K
720 min Winter	83.349	0.154	0.3	0.4	O K
960 min Winter	83.318	0.123	0.2	0.2	O K
1440 min Winter	83.283	0.088	0.2	0.1	O K
2160 min Winter	83.256	0.061	0.1	0.1	O K
2880 min Winter	83.244	0.049	0.1	0.0	O K
4320 min Winter	83.236	0.041	0.1	0.0	O K
5760 min Winter	83.231	0.036	0.0	0.0	O K
7200 min Winter	83.228	0.033	0.0	0.0	O K
8640 min Winter	83.226	0.031	0.0	0.0	O K
10080 min Winter	83.224	0.029	0.0	0.0	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	95.484	0.0	28		
60 min Winter	59.039	0.0	46		
120 min Winter	36.906	0.0	82		
180 min Winter	27.510	0.0	116		
240 min Winter	22.111	0.0	150		
360 min Winter	15.994	0.0	212		
480 min Winter	12.579	0.0	272		
600 min Winter	10.392	0.0	332		
720 min Winter	8.868	0.0	390		
960 min Winter	6.878	0.0	510		
1440 min Winter	4.783	0.0	738		
2160 min Winter	3.325	0.0	1100		
2880 min Winter	2.578	0.0	1468		
4320 min Winter	1.823	0.0	2100		
5760 min Winter	1.440	0.0	2928		
7200 min Winter	1.212	0.0	3624		
8640 min Winter	1.060	0.0	4400		
10080 min Winter	0.952	0.0	5032		
©1982-2018 Innovyze					

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15-17 Goldington Road Bedford MK40 3NH	19367 - OAKLEIGH ROAD 3 PERMEABLE PAVING	
Date 07/11/2023 File ROAD 3 - PERMEABLE PAVI...	Designed by ShD Checked by	
Micro Drainage Source Control 2018.1.1		

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 522310 217464 TL 22310 17464
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.005

Time (mins)	Area
From:	To: (ha)
0	4 0.005

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Woods Hardwick		Page 4																								
15-17 Goldington Road Bedford MK40 3NH	19367 - OAKLEIGH ROAD 3 PERMEABLE PAVING																									
Date 07/11/2023 File ROAD 3 - PERMEABLE PAVI...	Designed by ShD Checked by																									
Micro Drainage Source Control 2018.1.1																										
<u>Model Details</u> Storage is Online Cover Level (m) 83.825 <u>Porous Car Park Structure</u> <table> <tr> <td>Infiltration Coefficient Base (m/hr)</td> <td>0.13500</td> <td>Width (m)</td> <td>5.0</td> </tr> <tr> <td>Membrane Percolation (mm/hr)</td> <td>1000</td> <td>Length (m)</td> <td>10.0</td> </tr> <tr> <td>Max Percolation (l/s)</td> <td>13.9</td> <td>Slope (1:X)</td> <td>20.0</td> </tr> <tr> <td>Safety Factor</td> <td>2.0</td> <td>Depression Storage (mm)</td> <td>5</td> </tr> <tr> <td>Porosity</td> <td>0.30</td> <td>Evaporation (mm/day)</td> <td>3</td> </tr> <tr> <td>Invert Level (m)</td> <td>83.195</td> <td>Membrane Depth (m)</td> <td>0</td> </tr> </table>			Infiltration Coefficient Base (m/hr)	0.13500	Width (m)	5.0	Membrane Percolation (mm/hr)	1000	Length (m)	10.0	Max Percolation (l/s)	13.9	Slope (1:X)	20.0	Safety Factor	2.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	83.195	Membrane Depth (m)	0
Infiltration Coefficient Base (m/hr)	0.13500	Width (m)	5.0																							
Membrane Percolation (mm/hr)	1000	Length (m)	10.0																							
Max Percolation (l/s)	13.9	Slope (1:X)	20.0																							
Safety Factor	2.0	Depression Storage (mm)	5																							
Porosity	0.30	Evaporation (mm/day)	3																							
Invert Level (m)	83.195	Membrane Depth (m)	0																							
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Summary of Results for 30 year Return Period (+35%)

Half Drain Time : 191 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	81.498	0.273	0.4	10.0	O K
30 min Summer	81.574	0.349	0.5	12.8	O K
60 min Summer	81.636	0.411	0.6	15.2	O K
120 min Summer	81.656	0.431	0.9	16.2	O K
180 min Summer	81.659	0.434	1.0	16.3	O K
240 min Summer	81.659	0.434	1.0	16.3	O K
360 min Summer	81.657	0.432	0.9	16.2	O K
480 min Summer	81.651	0.426	0.9	16.0	O K
600 min Summer	81.645	0.420	0.8	15.7	O K
720 min Summer	81.640	0.415	0.7	15.4	O K
960 min Summer	81.629	0.404	0.5	14.8	O K
1440 min Summer	81.577	0.352	0.5	12.9	O K
2160 min Summer	81.505	0.280	0.4	10.2	O K
2880 min Summer	81.447	0.222	0.4	8.1	O K
4320 min Summer	81.363	0.138	0.4	5.0	O K
5760 min Summer	81.311	0.086	0.4	3.1	O K
7200 min Summer	81.283	0.058	0.4	2.1	O K
8640 min Summer	81.273	0.048	0.4	1.8	O K
10080 min Summer	81.269	0.044	0.3	1.6	O K
15 min Winter	81.498	0.273	0.4	10.0	O K
30 min Winter	81.574	0.349	0.5	12.8	O K
60 min Winter	81.636	0.411	0.6	15.3	O K
120 min Winter	81.660	0.435	1.0	16.3	O K
180 min Winter	81.662	0.437	1.0	16.4	O K
240 min Winter	81.663	0.438	1.0	16.4	O K
360 min Winter	81.658	0.433	0.9	16.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	118.767	0.0	19
30 min Summer	76.565	0.0	33
60 min Summer	47.170	0.0	62
120 min Summer	27.851	0.0	118
180 min Summer	20.380	0.0	144
240 min Summer	16.295	0.0	174
360 min Summer	11.848	0.0	244
480 min Summer	9.435	0.0	316
600 min Summer	7.897	0.0	390
720 min Summer	6.822	0.0	464
960 min Summer	5.405	0.0	626
1440 min Summer	3.866	0.0	908
2160 min Summer	2.764	0.0	1300
2880 min Summer	2.185	0.0	1672
4320 min Summer	1.582	0.0	2380
5760 min Summer	1.271	0.0	3056
7200 min Summer	1.086	0.0	3744
8640 min Summer	0.963	0.0	4408
10080 min Summer	0.875	0.0	5136
15 min Winter	118.767	0.0	18
30 min Winter	76.565	0.0	33
60 min Winter	47.170	0.0	62
120 min Winter	27.851	0.0	116
180 min Winter	20.380	0.0	144
240 min Winter	16.295	0.0	182
360 min Winter	11.848	0.0	260

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15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows Soakaway 01_A	
Date 06/11/2023 File PLOT 1 - SOAKAWAY.SRCX	Designed by ShD Checked by	
Micro Drainage	Source Control 2018.1.1	

Summary of Results for 30 year Return Period (+35%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
480 min Winter	81.651	0.426	0.8	15.9	O K
600 min Winter	81.643	0.418	0.7	15.6	O K
720 min Winter	81.636	0.411	0.6	15.2	O K
960 min Winter	81.614	0.389	0.5	14.2	O K
1440 min Winter	81.536	0.311	0.4	11.4	O K
2160 min Winter	81.438	0.213	0.4	7.8	O K
2880 min Winter	81.363	0.138	0.4	5.1	O K
4320 min Winter	81.278	0.053	0.4	1.9	O K
5760 min Winter	81.267	0.042	0.3	1.5	O K
7200 min Winter	81.261	0.036	0.3	1.3	O K
8640 min Winter	81.257	0.032	0.2	1.2	O K
10080 min Winter	81.254	0.029	0.2	1.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
480 min Winter	9.435	0.0	340
600 min Winter	7.897	0.0	422
720 min Winter	6.822	0.0	506
960 min Winter	5.405	0.0	682
1440 min Winter	3.866	0.0	966
2160 min Winter	2.764	0.0	1364
2880 min Winter	2.185	0.0	1728
4320 min Winter	1.582	0.0	2292
5760 min Winter	1.271	0.0	2944
7200 min Winter	1.086	0.0	3656
8640 min Winter	0.963	0.0	4384
10080 min Winter	0.875	0.0	5040

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15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows Soakaway 01_A	
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Micro Drainage		
Source Control 2018.1.1		

Rainfall Details

Rainfall Model	FEH	Winter Storms	Yes
Return Period (years)	30	Cv (Summer)	1.000
FEH Rainfall Version	2013	Cv (Winter)	1.000
Site Location	GB 459339 237869 SP 59339 37869	Shortest Storm (mins)	15
Data Type	Point	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+35

Time Area Diagram

Total Area (ha) 0.036

Time (mins)		Area
From:	To:	(ha)
0	4	0.036

Woods Hardwick		Page 4
15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows Soakaway 01_A	
Date 06/11/2023 File PLOT 1 - SOAKAWAY.SRCX	Designed by ShD Checked by	
Micro Drainage	Source Control 2018.1.1	

Model Details

Storage is Online Cover Level (m) 82.375

Complex Structure

Cellular Storage

Invert Level (m) 81.225 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.06900 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.06900

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	38.5	38.5	0.400	38.5	48.5	0.500	0.0	48.5

Porous Car Park

Infiltration Coefficient Base (m/hr) 0.06900 Width (m) 7.0
Membrane Percolation (mm/hr) 1000 Length (m) 11.0
Max Percolation (l/s) 21.4 Slope (1:X) 0.0
Safety Factor 2.0 Depression Storage (mm) 5
Porosity 0.30 Evaporation (mm/day) 3
Invert Level (m) 81.625 Membrane Depth (m) 0

Woods Hardwick				Page 1																																																																																																																																																																																																																			
15-17 Goldington Road Bedford MK40 3NH		190367 - Oakleigh Meadows Soakaway 01_A																																																																																																																																																																																																																					
Date 06/11/2023 File Plot 1 - Soakaway.SRCX		Designed by ShD Checked by																																																																																																																																																																																																																					
Micro Drainage		Source Control 2018.1.1																																																																																																																																																																																																																					
Summary of Results for 100 year Return Period (+40%) Half Drain Time : 230 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>81.597</td><td>0.372</td><td>0.5</td><td>13.6</td><td>O K</td></tr><tr><td>30 min Summer</td><td>81.688</td><td>0.463</td><td>1.2</td><td>17.2</td><td>O K</td></tr><tr><td>60 min Summer</td><td>81.814</td><td>0.589</td><td>1.2</td><td>20.2</td><td>O K</td></tr><tr><td>120 min Summer</td><td>81.867</td><td>0.642</td><td>1.2</td><td>21.4</td><td>O K</td></tr><tr><td>180 min Summer</td><td>81.876</td><td>0.651</td><td>1.2</td><td>21.7</td><td>O K</td></tr><tr><td>240 min Summer</td><td>81.878</td><td>0.653</td><td>1.2</td><td>21.7</td><td>O K</td></tr><tr><td>360 min Summer</td><td>81.864</td><td>0.639</td><td>1.2</td><td>21.4</td><td>O K</td></tr><tr><td>480 min Summer</td><td>81.836</td><td>0.611</td><td>1.2</td><td>20.7</td><td>O K</td></tr><tr><td>600 min Summer</td><td>81.802</td><td>0.577</td><td>1.2</td><td>19.9</td><td>O K</td></tr><tr><td>720 min Summer</td><td>81.769</td><td>0.544</td><td>1.2</td><td>19.2</td><td>O K</td></tr><tr><td>960 min Summer</td><td>81.709</td><td>0.484</td><td>1.2</td><td>17.8</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>81.662</td><td>0.437</td><td>1.0</td><td>16.4</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>81.636</td><td>0.411</td><td>0.6</td><td>15.3</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>81.587</td><td>0.362</td><td>0.5</td><td>13.2</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>81.471</td><td>0.246</td><td>0.4</td><td>9.0</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>81.391</td><td>0.166</td><td>0.4</td><td>6.1</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>81.339</td><td>0.114</td><td>0.4</td><td>4.2</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>81.305</td><td>0.080</td><td>0.4</td><td>2.9</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>81.284</td><td>0.059</td><td>0.4</td><td>2.2</td><td>O K</td></tr><tr><td>15 min Winter</td><td>81.597</td><td>0.372</td><td>0.5</td><td>13.6</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>159.472</td><td>0.0</td><td>19</td></tr><tr><td>30 min Summer</td><td>103.883</td><td>0.0</td><td>33</td></tr><tr><td>60 min Summer</td><td>64.175</td><td>0.0</td><td>62</td></tr><tr><td>120 min Summer</td><td>37.442</td><td>0.0</td><td>120</td></tr><tr><td>180 min Summer</td><td>27.313</td><td>0.0</td><td>148</td></tr><tr><td>240 min Summer</td><td>21.814</td><td>0.0</td><td>180</td></tr><tr><td>360 min Summer</td><td>15.842</td><td>0.0</td><td>246</td></tr><tr><td>480 min Summer</td><td>12.584</td><td>0.0</td><td>314</td></tr><tr><td>600 min Summer</td><td>10.503</td><td>0.0</td><td>380</td></tr><tr><td>720 min Summer</td><td>9.048</td><td>0.0</td><td>448</td></tr><tr><td>960 min Summer</td><td>7.132</td><td>0.0</td><td>576</td></tr><tr><td>1440 min Summer</td><td>5.062</td><td>0.0</td><td>836</td></tr><tr><td>2160 min Summer</td><td>3.582</td><td>0.0</td><td>1276</td></tr><tr><td>2880 min Summer</td><td>2.807</td><td>0.0</td><td>1728</td></tr><tr><td>4320 min Summer</td><td>1.998</td><td>0.0</td><td>2464</td></tr><tr><td>5760 min Summer</td><td>1.583</td><td>0.0</td><td>3176</td></tr><tr><td>7200 min Summer</td><td>1.340</td><td>0.0</td><td>3888</td></tr><tr><td>8640 min Summer</td><td>1.179</td><td>0.0</td><td>4504</td></tr><tr><td>10080 min Summer</td><td>1.066</td><td>0.0</td><td>5152</td></tr><tr><td>15 min Winter</td><td>159.472</td><td>0.0</td><td>19</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	81.597	0.372	0.5	13.6	O K	30 min Summer	81.688	0.463	1.2	17.2	O K	60 min Summer	81.814	0.589	1.2	20.2	O K	120 min Summer	81.867	0.642	1.2	21.4	O K	180 min Summer	81.876	0.651	1.2	21.7	O K	240 min Summer	81.878	0.653	1.2	21.7	O K	360 min Summer	81.864	0.639	1.2	21.4	O K	480 min Summer	81.836	0.611	1.2	20.7	O K	600 min Summer	81.802	0.577	1.2	19.9	O K	720 min Summer	81.769	0.544	1.2	19.2	O K	960 min Summer	81.709	0.484	1.2	17.8	O K	1440 min Summer	81.662	0.437	1.0	16.4	O K	2160 min Summer	81.636	0.411	0.6	15.3	O K	2880 min Summer	81.587	0.362	0.5	13.2	O K	4320 min Summer	81.471	0.246	0.4	9.0	O K	5760 min Summer	81.391	0.166	0.4	6.1	O K	7200 min Summer	81.339	0.114	0.4	4.2	O K	8640 min Summer	81.305	0.080	0.4	2.9	O K	10080 min Summer	81.284	0.059	0.4	2.2	O K	15 min Winter	81.597	0.372	0.5	13.6	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	159.472	0.0	19	30 min Summer	103.883	0.0	33	60 min Summer	64.175	0.0	62	120 min Summer	37.442	0.0	120	180 min Summer	27.313	0.0	148	240 min Summer	21.814	0.0	180	360 min Summer	15.842	0.0	246	480 min Summer	12.584	0.0	314	600 min Summer	10.503	0.0	380	720 min Summer	9.048	0.0	448	960 min Summer	7.132	0.0	576	1440 min Summer	5.062	0.0	836	2160 min Summer	3.582	0.0	1276	2880 min Summer	2.807	0.0	1728	4320 min Summer	1.998	0.0	2464	5760 min Summer	1.583	0.0	3176	7200 min Summer	1.340	0.0	3888	8640 min Summer	1.179	0.0	4504	10080 min Summer	1.066	0.0	5152	15 min Winter	159.472	0.0	19
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480 min Summer	81.836	0.611	1.2	20.7	O K																																																																																																																																																																																																																		
600 min Summer	81.802	0.577	1.2	19.9	O K																																																																																																																																																																																																																		
720 min Summer	81.769	0.544	1.2	19.2	O K																																																																																																																																																																																																																		
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Woods Hardwick		Page 2			
15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows Soakaway 01_A				
Date 06/11/2023 File Plot 1 - Soakaway.SRCX	Designed by ShD Checked by				
Micro Drainage Source Control 2018.1.1					
<u>Summary of Results for 100 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	81.690	0.465	1.2	17.3	O K
60 min Winter	81.819	0.594	1.2	20.3	O K
120 min Winter	81.879	0.654	1.2	21.7	O K
180 min Winter	81.883	0.658	1.2	21.8	O K
240 min Winter	81.882	0.657	1.2	21.8	O K
360 min Winter	81.857	0.632	1.2	21.2	O K
480 min Winter	81.817	0.592	1.2	20.3	O K
600 min Winter	81.773	0.548	1.2	19.3	O K
720 min Winter	81.732	0.507	1.2	18.3	O K
960 min Winter	81.677	0.452	1.2	16.9	O K
1440 min Winter	81.649	0.424	0.8	15.9	O K
2160 min Winter	81.595	0.370	0.5	13.5	O K
2880 min Winter	81.497	0.272	0.4	10.0	O K
4320 min Winter	81.355	0.130	0.4	4.8	O K
5760 min Winter	81.280	0.055	0.4	2.0	O K
7200 min Winter	81.269	0.044	0.3	1.6	O K
8640 min Winter	81.264	0.039	0.3	1.4	O K
10080 min Winter	81.260	0.035	0.3	1.3	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	103.883	0.0	32		
60 min Winter	64.175	0.0	60		
120 min Winter	37.442	0.0	116		
180 min Winter	27.313	0.0	164		
240 min Winter	21.814	0.0	186		
360 min Winter	15.842	0.0	262		
480 min Winter	12.584	0.0	336		
600 min Winter	10.503	0.0	404		
720 min Winter	9.048	0.0	470		
960 min Winter	7.132	0.0	590		
1440 min Winter	5.062	0.0	896		
2160 min Winter	3.582	0.0	1424		
2880 min Winter	2.807	0.0	1816		
4320 min Winter	1.998	0.0	2508		
5760 min Winter	1.583	0.0	3056		
7200 min Winter	1.340	0.0	3680		
8640 min Winter	1.179	0.0	4400		
10080 min Winter	1.066	0.0	5128		
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15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows Soakaway 01_A	
Date 06/11/2023 File Plot 1 - Soakaway.SRCX	Designed by ShD Checked by	
Micro Drainage Source Control 2018.1.1		

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 459339 237869 SP 59339 37869
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.036

	Time (mins)	Area
From:	To:	(ha)
	0	4 0.036

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Woods Hardwick		Page 4
15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows Soakaway 01_A	
Date 06/11/2023 File Plot 1 - Soakaway.SRCX	Designed by ShD Checked by	
Micro Drainage Source Control 2018.1.1		

Model Details

Storage is Online Cover Level (m) 82.375

Complex Structure

Cellular Storage

Invert Level (m) 81.225 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.06900 Porosity 0.95
 Infiltration Coefficient Side (m/hr) 0.06900

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	38.5	38.5	0.500	0.0	48.5
0.400	38.5	48.5			

Porous Car Park

Infiltration Coefficient Base (m/hr)	0.06900	Width (m)	7.0
Membrane Percolation (mm/hr)	1000	Length (m)	11.0
Max Percolation (l/s)	21.4	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	81.625	Membrane Depth (m)	0

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Summary of Results for 30 year Return Period (+35%)

Half Drain Time : 120 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	81.865	0.165	0.7	6.9	O K
30 min Summer	81.904	0.204	0.8	8.5	O K
60 min Summer	81.933	0.233	0.8	9.7	O K
120 min Summer	81.936	0.236	0.8	9.9	O K
180 min Summer	81.931	0.231	0.8	9.7	O K
240 min Summer	81.924	0.224	0.8	9.4	O K
360 min Summer	81.906	0.206	0.8	8.6	O K
480 min Summer	81.889	0.189	0.7	7.9	O K
600 min Summer	81.872	0.172	0.7	7.2	O K
720 min Summer	81.855	0.155	0.7	6.5	O K
960 min Summer	81.826	0.126	0.7	5.3	O K
1440 min Summer	81.782	0.082	0.7	3.4	O K
2160 min Summer	81.749	0.049	0.7	2.1	O K
2880 min Summer	81.741	0.041	0.6	1.7	O K
4320 min Summer	81.730	0.030	0.4	1.3	O K
5760 min Summer	81.725	0.025	0.3	1.0	O K
7200 min Summer	81.721	0.021	0.3	0.9	O K
8640 min Summer	81.719	0.019	0.3	0.8	O K
10080 min Summer	81.717	0.017	0.2	0.7	O K
15 min Winter	81.865	0.165	0.7	6.9	O K
30 min Winter	81.904	0.204	0.8	8.5	O K
60 min Winter	81.933	0.233	0.8	9.8	O K
120 min Winter	81.937	0.237	0.8	9.9	O K
180 min Winter	81.929	0.229	0.8	9.6	O K
240 min Winter	81.919	0.219	0.8	9.1	O K
360 min Winter	81.893	0.193	0.8	8.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	118.767	0.0	18
30 min Summer	76.565	0.0	32
60 min Summer	47.170	0.0	62
120 min Summer	27.851	0.0	104
180 min Summer	20.380	0.0	136
240 min Summer	16.295	0.0	170
360 min Summer	11.848	0.0	238
480 min Summer	9.435	0.0	306
600 min Summer	7.897	0.0	372
720 min Summer	6.822	0.0	436
960 min Summer	5.405	0.0	560
1440 min Summer	3.866	0.0	794
2160 min Summer	2.764	0.0	1120
2880 min Summer	2.185	0.0	1472
4320 min Summer	1.582	0.0	2204
5760 min Summer	1.271	0.0	2936
7200 min Summer	1.086	0.0	3672
8640 min Summer	0.963	0.0	4408
10080 min Summer	0.875	0.0	5120
15 min Winter	118.767	0.0	18
30 min Winter	76.565	0.0	32
60 min Winter	47.170	0.0	60
120 min Winter	27.851	0.0	114
180 min Winter	20.380	0.0	142
240 min Winter	16.295	0.0	180
360 min Winter	11.848	0.0	254

Summary of Results for 30 year Return Period (+35%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
480 min Winter	81.868	0.168	0.7	7.0	O K
600 min Winter	81.843	0.143	0.7	6.0	O K
720 min Winter	81.821	0.121	0.7	5.1	O K
960 min Winter	81.784	0.084	0.7	3.5	O K
1440 min Winter	81.747	0.047	0.7	2.0	O K
2160 min Winter	81.734	0.034	0.5	1.4	O K
2880 min Winter	81.727	0.027	0.4	1.1	O K
4320 min Winter	81.720	0.020	0.3	0.8	O K
5760 min Winter	81.716	0.016	0.2	0.7	O K
7200 min Winter	81.714	0.014	0.2	0.6	O K
8640 min Winter	81.712	0.012	0.2	0.5	O K
10080 min Winter	81.711	0.011	0.2	0.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
480 min Winter	9.435	0.0	326
600 min Winter	7.897	0.0	392
720 min Winter	6.822	0.0	456
960 min Winter	5.405	0.0	572
1440 min Winter	3.866	0.0	764
2160 min Winter	2.764	0.0	1124
2880 min Winter	2.185	0.0	1496
4320 min Winter	1.582	0.0	2204
5760 min Winter	1.271	0.0	2896
7200 min Winter	1.086	0.0	3672
8640 min Winter	0.963	0.0	4344
10080 min Winter	0.875	0.0	4968

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15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows SA-02_B	
Date 12/07/2024	Designed by ShD	
File PLOT 2 - SOAKAWAY.SRCX	Checked by	
Micro Drainage		Source Control 2018.1.1

Rainfall Details

Rainfall Model	FEH	Winter Storms	Yes
Return Period (years)	30	Cv (Summer)	1.000
FEH Rainfall Version	2013	Cv (Winter)	1.000
Site Location	GB 459339 237869 SP 59339 37869	Shortest Storm (mins)	15
Data Type	Point	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+35

Time Area Diagram

Total Area (ha) 0.025

Time (mins)		Area
From:	To:	(ha)
0	4	0.025

Model Details

Storage is Online Cover Level (m) 84.575

Cellular Storage Structure

Invert Level (m) 81.700 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.11000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.11000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	44.0	44.0	0.400	44.0	54.6	0.500	0.0	55.9

Woods Hardwick				Page 1																																																																																																																																																																																																																			
15-17 Goldington Road Bedford MK40 3NH		190367 - Oakleigh Meadows SA-02_B																																																																																																																																																																																																																					
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Summary of Results for 100 year Return Period (+40%) Half Drain Time : 157 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>81.924</td><td>0.224</td><td>0.8</td><td>9.4</td><td>O K</td></tr><tr><td>30 min Summer</td><td>81.983</td><td>0.283</td><td>0.8</td><td>11.8</td><td>O K</td></tr><tr><td>60 min Summer</td><td>82.030</td><td>0.330</td><td>0.8</td><td>13.8</td><td>O K</td></tr><tr><td>120 min Summer</td><td>82.040</td><td>0.340</td><td>0.8</td><td>14.2</td><td>O K</td></tr><tr><td>180 min Summer</td><td>82.034</td><td>0.334</td><td>0.8</td><td>14.0</td><td>O K</td></tr><tr><td>240 min Summer</td><td>82.026</td><td>0.326</td><td>0.8</td><td>13.6</td><td>O K</td></tr><tr><td>360 min Summer</td><td>82.007</td><td>0.307</td><td>0.8</td><td>12.8</td><td>O K</td></tr><tr><td>480 min Summer</td><td>81.987</td><td>0.287</td><td>0.8</td><td>12.0</td><td>O K</td></tr><tr><td>600 min Summer</td><td>81.966</td><td>0.266</td><td>0.8</td><td>11.1</td><td>O K</td></tr><tr><td>720 min Summer</td><td>81.947</td><td>0.247</td><td>0.8</td><td>10.3</td><td>O K</td></tr><tr><td>960 min Summer</td><td>81.910</td><td>0.210</td><td>0.8</td><td>8.8</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>81.847</td><td>0.147</td><td>0.7</td><td>6.2</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>81.784</td><td>0.084</td><td>0.7</td><td>3.5</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>81.753</td><td>0.053</td><td>0.7</td><td>2.2</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>81.738</td><td>0.038</td><td>0.5</td><td>1.6</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>81.731</td><td>0.031</td><td>0.4</td><td>1.3</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>81.726</td><td>0.026</td><td>0.4</td><td>1.1</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>81.723</td><td>0.023</td><td>0.3</td><td>1.0</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>81.721</td><td>0.021</td><td>0.3</td><td>0.9</td><td>O K</td></tr><tr><td>15 min Winter</td><td>81.924</td><td>0.224</td><td>0.8</td><td>9.4</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>159.472</td><td>0.0</td><td>18</td></tr><tr><td>30 min Summer</td><td>103.883</td><td>0.0</td><td>33</td></tr><tr><td>60 min Summer</td><td>64.175</td><td>0.0</td><td>62</td></tr><tr><td>120 min Summer</td><td>37.442</td><td>0.0</td><td>120</td></tr><tr><td>180 min Summer</td><td>27.313</td><td>0.0</td><td>152</td></tr><tr><td>240 min Summer</td><td>21.814</td><td>0.0</td><td>182</td></tr><tr><td>360 min Summer</td><td>15.842</td><td>0.0</td><td>248</td></tr><tr><td>480 min Summer</td><td>12.584</td><td>0.0</td><td>316</td></tr><tr><td>600 min Summer</td><td>10.503</td><td>0.0</td><td>386</td></tr><tr><td>720 min Summer</td><td>9.048</td><td>0.0</td><td>452</td></tr><tr><td>960 min Summer</td><td>7.132</td><td>0.0</td><td>580</td></tr><tr><td>1440 min Summer</td><td>5.062</td><td>0.0</td><td>826</td></tr><tr><td>2160 min Summer</td><td>3.582</td><td>0.0</td><td>1168</td></tr><tr><td>2880 min Summer</td><td>2.807</td><td>0.0</td><td>1496</td></tr><tr><td>4320 min Summer</td><td>1.998</td><td>0.0</td><td>2204</td></tr><tr><td>5760 min Summer</td><td>1.583</td><td>0.0</td><td>2936</td></tr><tr><td>7200 min Summer</td><td>1.340</td><td>0.0</td><td>3672</td></tr><tr><td>8640 min Summer</td><td>1.179</td><td>0.0</td><td>4360</td></tr><tr><td>10080 min Summer</td><td>1.066</td><td>0.0</td><td>5136</td></tr><tr><td>15 min Winter</td><td>159.472</td><td>0.0</td><td>18</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	81.924	0.224	0.8	9.4	O K	30 min Summer	81.983	0.283	0.8	11.8	O K	60 min Summer	82.030	0.330	0.8	13.8	O K	120 min Summer	82.040	0.340	0.8	14.2	O K	180 min Summer	82.034	0.334	0.8	14.0	O K	240 min Summer	82.026	0.326	0.8	13.6	O K	360 min Summer	82.007	0.307	0.8	12.8	O K	480 min Summer	81.987	0.287	0.8	12.0	O K	600 min Summer	81.966	0.266	0.8	11.1	O K	720 min Summer	81.947	0.247	0.8	10.3	O K	960 min Summer	81.910	0.210	0.8	8.8	O K	1440 min Summer	81.847	0.147	0.7	6.2	O K	2160 min Summer	81.784	0.084	0.7	3.5	O K	2880 min Summer	81.753	0.053	0.7	2.2	O K	4320 min Summer	81.738	0.038	0.5	1.6	O K	5760 min Summer	81.731	0.031	0.4	1.3	O K	7200 min Summer	81.726	0.026	0.4	1.1	O K	8640 min Summer	81.723	0.023	0.3	1.0	O K	10080 min Summer	81.721	0.021	0.3	0.9	O K	15 min Winter	81.924	0.224	0.8	9.4	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	159.472	0.0	18	30 min Summer	103.883	0.0	33	60 min Summer	64.175	0.0	62	120 min Summer	37.442	0.0	120	180 min Summer	27.313	0.0	152	240 min Summer	21.814	0.0	182	360 min Summer	15.842	0.0	248	480 min Summer	12.584	0.0	316	600 min Summer	10.503	0.0	386	720 min Summer	9.048	0.0	452	960 min Summer	7.132	0.0	580	1440 min Summer	5.062	0.0	826	2160 min Summer	3.582	0.0	1168	2880 min Summer	2.807	0.0	1496	4320 min Summer	1.998	0.0	2204	5760 min Summer	1.583	0.0	2936	7200 min Summer	1.340	0.0	3672	8640 min Summer	1.179	0.0	4360	10080 min Summer	1.066	0.0	5136	15 min Winter	159.472	0.0	18
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Woods Hardwick		Page 2			
15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows SA-02_B				
Date 12/07/2024 File PLOT 2 - SOAKAWAY.SRCX	Designed by ShD Checked by				
Micro Drainage Source Control 2018.1.1					
<u>Summary of Results for 100 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	81.984	0.284	0.8	11.9	O K
60 min Winter	82.030	0.330	0.8	13.8	O K
120 min Winter	82.042	0.342	0.8	14.3	O K
180 min Winter	82.034	0.334	0.8	14.0	O K
240 min Winter	82.024	0.324	0.8	13.5	O K
360 min Winter	81.999	0.299	0.8	12.5	O K
480 min Winter	81.970	0.270	0.8	11.3	O K
600 min Winter	81.941	0.241	0.8	10.1	O K
720 min Winter	81.913	0.213	0.8	8.9	O K
960 min Winter	81.863	0.163	0.7	6.8	O K
1440 min Winter	81.786	0.086	0.7	3.6	O K
2160 min Winter	81.744	0.044	0.6	1.9	O K
2880 min Winter	81.735	0.035	0.5	1.5	O K
4320 min Winter	81.725	0.025	0.3	1.0	O K
5760 min Winter	81.720	0.020	0.3	0.8	O K
7200 min Winter	81.717	0.017	0.2	0.7	O K
8640 min Winter	81.715	0.015	0.2	0.6	O K
10080 min Winter	81.714	0.014	0.2	0.6	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	103.883	0.0	32		
60 min Winter	64.175	0.0	60		
120 min Winter	37.442	0.0	116		
180 min Winter	27.313	0.0	166		
240 min Winter	21.814	0.0	188		
360 min Winter	15.842	0.0	266		
480 min Winter	12.584	0.0	340		
600 min Winter	10.503	0.0	410		
720 min Winter	9.048	0.0	480		
960 min Winter	7.132	0.0	610		
1440 min Winter	5.062	0.0	838		
2160 min Winter	3.582	0.0	1128		
2880 min Winter	2.807	0.0	1472		
4320 min Winter	1.998	0.0	2204		
5760 min Winter	1.583	0.0	2904		
7200 min Winter	1.340	0.0	3632		
8640 min Winter	1.179	0.0	4488		
10080 min Winter	1.066	0.0	5064		
©1982-2018 Innovyze					

Woods Hardwick		Page 3																																	
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<u>Rainfall Details</u> <table><tr><td>Rainfall Model</td><td>FEH</td></tr><tr><td>Return Period (years)</td><td>100</td></tr><tr><td>FEH Rainfall Version</td><td>2013</td></tr><tr><td>Site Location</td><td>GB 459339 237869 SP 59339 37869</td></tr><tr><td>Data Type</td><td>Point</td></tr><tr><td>Summer Storms</td><td>Yes</td></tr><tr><td>Winter Storms</td><td>Yes</td></tr><tr><td>Cv (Summer)</td><td>1.000</td></tr><tr><td>Cv (Winter)</td><td>1.000</td></tr><tr><td>Shortest Storm (mins)</td><td>15</td></tr><tr><td>Longest Storm (mins)</td><td>10080</td></tr><tr><td>Climate Change %</td><td>+40</td></tr></table> <u>Time Area Diagram</u> Total Area (ha) 0.025 <table><thead><tr><th colspan="2">Time (mins)</th><th>Area</th></tr><tr><th>From:</th><th>To:</th><th>(ha)</th></tr></thead><tbody><tr><td>0</td><td>4</td><td>0.025</td></tr></tbody></table>			Rainfall Model	FEH	Return Period (years)	100	FEH Rainfall Version	2013	Site Location	GB 459339 237869 SP 59339 37869	Data Type	Point	Summer Storms	Yes	Winter Storms	Yes	Cv (Summer)	1.000	Cv (Winter)	1.000	Shortest Storm (mins)	15	Longest Storm (mins)	10080	Climate Change %	+40	Time (mins)		Area	From:	To:	(ha)	0	4	0.025
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Model Details Storage is Online Cover Level (m) 84.575 Cellular Storage Structure Invert Level (m) 81.700 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.11000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.11000 <table><thead><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr></thead><tbody><tr><td>0.000</td><td>44.0</td><td>44.0</td><td>0.500</td><td>0.0</td><td>55.9</td></tr><tr><td>0.400</td><td>44.0</td><td>54.6</td><td></td><td></td><td></td></tr></tbody></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	44.0	44.0	0.500	0.0	55.9	0.400	44.0	54.6			
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0.000	44.0	44.0	0.500	0.0	55.9															
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Summary of Results for 30 year Return Period (+35%)

Half Drain Time : 240 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	83.716	0.366	0.5	8.5	O K
30 min Summer	83.811	0.461	0.5	10.7	O K
60 min Summer	83.893	0.543	0.5	12.6	O K
120 min Summer	83.936	0.586	0.6	13.6	O K
180 min Summer	83.940	0.590	0.6	13.7	O K
240 min Summer	83.933	0.583	0.6	13.6	O K
360 min Summer	83.912	0.562	0.5	13.1	O K
480 min Summer	83.889	0.539	0.5	12.5	O K
600 min Summer	83.866	0.516	0.5	12.0	O K
720 min Summer	83.843	0.493	0.5	11.5	O K
960 min Summer	83.799	0.449	0.5	10.5	O K
1440 min Summer	83.718	0.368	0.5	8.6	O K
2160 min Summer	83.619	0.269	0.5	6.3	O K
2880 min Summer	83.545	0.195	0.4	4.5	O K
4320 min Summer	83.449	0.099	0.4	2.3	O K
5760 min Summer	83.405	0.055	0.4	1.3	O K
7200 min Summer	83.395	0.045	0.4	1.1	O K
8640 min Summer	83.390	0.040	0.3	0.9	O K
10080 min Summer	83.387	0.037	0.3	0.9	O K
15 min Winter	83.716	0.366	0.5	8.5	O K
30 min Winter	83.812	0.462	0.5	10.7	O K
60 min Winter	83.894	0.544	0.5	12.7	O K
120 min Winter	83.940	0.590	0.6	13.7	O K
180 min Winter	83.946	0.596	0.6	13.9	O K
240 min Winter	83.937	0.587	0.6	13.7	O K
360 min Winter	83.911	0.561	0.5	13.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	118.767	0.0	18
30 min Summer	76.565	0.0	33
60 min Summer	47.170	0.0	62
120 min Summer	27.851	0.0	122
180 min Summer	20.380	0.0	180
240 min Summer	16.295	0.0	206
360 min Summer	11.848	0.0	268
480 min Summer	9.435	0.0	336
600 min Summer	7.897	0.0	404
720 min Summer	6.822	0.0	472
960 min Summer	5.405	0.0	608
1440 min Summer	3.866	0.0	878
2160 min Summer	2.764	0.0	1256
2880 min Summer	2.185	0.0	1616
4320 min Summer	1.582	0.0	2292
5760 min Summer	1.271	0.0	2944
7200 min Summer	1.086	0.0	3672
8640 min Summer	0.963	0.0	4400
10080 min Summer	0.875	0.0	5104
15 min Winter	118.767	0.0	18
30 min Winter	76.565	0.0	32
60 min Winter	47.170	0.0	62
120 min Winter	27.851	0.0	118
180 min Winter	20.380	0.0	174
240 min Winter	16.295	0.0	224
360 min Winter	11.848	0.0	280

Woods Hardwick		Page 2
15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows SA-03_A	
Date 06/11/2023 File PLOT 3 - SOAKAWAY.SRCX	Designed by ShD Checked by	
Micro Drainage	Source Control 2018.1.1	

Summary of Results for 30 year Return Period (+35%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
480 min Winter	83.882	0.532	0.5	12.4	O K
600 min Winter	83.850	0.500	0.5	11.6	O K
720 min Winter	83.818	0.468	0.5	10.9	O K
960 min Winter	83.757	0.407	0.5	9.5	O K
1440 min Winter	83.646	0.296	0.5	6.9	O K
2160 min Winter	83.520	0.170	0.4	4.0	O K
2880 min Winter	83.436	0.086	0.4	2.0	O K
4320 min Winter	83.393	0.043	0.3	1.0	O K
5760 min Winter	83.384	0.034	0.3	0.8	O K
7200 min Winter	83.379	0.029	0.2	0.7	O K
8640 min Winter	83.376	0.026	0.2	0.6	O K
10080 min Winter	83.374	0.024	0.2	0.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
480 min Winter	9.435	0.0	356
600 min Winter	7.897	0.0	434
720 min Winter	6.822	0.0	506
960 min Winter	5.405	0.0	652
1440 min Winter	3.866	0.0	924
2160 min Winter	2.764	0.0	1296
2880 min Winter	2.185	0.0	1616
4320 min Winter	1.582	0.0	2204
5760 min Winter	1.271	0.0	2936
7200 min Winter	1.086	0.0	3672
8640 min Winter	0.963	0.0	4400
10080 min Winter	0.875	0.0	5080

Woods Hardwick		Page 3
15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows SA-03_A	
Date 06/11/2023 File PLOT 3 - SOAKAWAY.SRCX	Designed by ShD Checked by	
Micro Drainage		
Source Control 2018.1.1		

Rainfall Details

Rainfall Model	FEH	Winter Storms	Yes
Return Period (years)	30	Cv (Summer)	1.000
FEH Rainfall Version	2013	Cv (Winter)	1.000
Site Location	GB 459339 237869 SP 59339 37869	Shortest Storm (mins)	15
Data Type	Point	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+35

Time Area Diagram

Total Area (ha) 0.030

Time (mins)		Area
From:	To:	(ha)
0	4	0.030

Model Details

Storage is Online Cover Level (m) 85.050

Cellular Storage Structure

Invert Level (m) 83.350 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.11000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.11000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	24.5	24.5	0.800	24.5	40.3	0.900	0.0	41.3

Woods Hardwick				Page 1																																																																																																																																																																																																																			
15-17 Goldington Road Bedford MK40 3NH		190367 - Oakleigh Meadows SA-03_A																																																																																																																																																																																																																					
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Micro Drainage		Source Control 2018.1.1																																																																																																																																																																																																																					
Summary of Results for 100 year Return Period (+40%) Half Drain Time : 308 minutes. <table><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr><tr><td>15 min Summer</td><td>83.846</td><td>0.496</td><td>0.5</td><td>11.5</td><td>O K</td></tr><tr><td>30 min Summer</td><td>83.984</td><td>0.634</td><td>0.6</td><td>14.7</td><td>O K</td></tr><tr><td>60 min Summer</td><td>84.104</td><td>0.754</td><td>0.6</td><td>17.6</td><td>O K</td></tr><tr><td>120 min Summer</td><td>84.173</td><td>0.823</td><td>0.6</td><td>19.0</td><td>O K</td></tr><tr><td>180 min Summer</td><td>84.285</td><td>0.935</td><td>0.6</td><td>19.4</td><td>O K</td></tr><tr><td>240 min Summer</td><td>84.205</td><td>0.855</td><td>0.6</td><td>19.3</td><td>O K</td></tr><tr><td>360 min Summer</td><td>84.159</td><td>0.809</td><td>0.6</td><td>18.8</td><td>O K</td></tr><tr><td>480 min Summer</td><td>84.131</td><td>0.781</td><td>0.6</td><td>18.2</td><td>O K</td></tr><tr><td>600 min Summer</td><td>84.102</td><td>0.752</td><td>0.6</td><td>17.5</td><td>O K</td></tr><tr><td>720 min Summer</td><td>84.073</td><td>0.723</td><td>0.6</td><td>16.8</td><td>O K</td></tr><tr><td>960 min Summer</td><td>84.018</td><td>0.668</td><td>0.6</td><td>15.5</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>83.917</td><td>0.567</td><td>0.5</td><td>13.2</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>83.791</td><td>0.441</td><td>0.5</td><td>10.3</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>83.693</td><td>0.343</td><td>0.5</td><td>8.0</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>83.552</td><td>0.202</td><td>0.4</td><td>4.7</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>83.465</td><td>0.115</td><td>0.4</td><td>2.7</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>83.418</td><td>0.068</td><td>0.4</td><td>1.6</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>83.399</td><td>0.049</td><td>0.4</td><td>1.1</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>83.395</td><td>0.045</td><td>0.3</td><td>1.0</td><td>O K</td></tr><tr><td>15 min Winter</td><td>83.846</td><td>0.496</td><td>0.5</td><td>11.5</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>159.472</td><td>0.0</td><td>19</td></tr><tr><td>30 min Summer</td><td>103.883</td><td>0.0</td><td>33</td></tr><tr><td>60 min Summer</td><td>64.175</td><td>0.0</td><td>62</td></tr><tr><td>120 min Summer</td><td>37.442</td><td>0.0</td><td>122</td></tr><tr><td>180 min Summer</td><td>27.313</td><td>0.0</td><td>180</td></tr><tr><td>240 min Summer</td><td>21.814</td><td>0.0</td><td>230</td></tr><tr><td>360 min Summer</td><td>15.842</td><td>0.0</td><td>286</td></tr><tr><td>480 min Summer</td><td>12.584</td><td>0.0</td><td>350</td></tr><tr><td>600 min Summer</td><td>10.503</td><td>0.0</td><td>418</td></tr><tr><td>720 min Summer</td><td>9.048</td><td>0.0</td><td>486</td></tr><tr><td>960 min Summer</td><td>7.132</td><td>0.0</td><td>626</td></tr><tr><td>1440 min Summer</td><td>5.062</td><td>0.0</td><td>894</td></tr><tr><td>2160 min Summer</td><td>3.582</td><td>0.0</td><td>1280</td></tr><tr><td>2880 min Summer</td><td>2.807</td><td>0.0</td><td>1668</td></tr><tr><td>4320 min Summer</td><td>1.998</td><td>0.0</td><td>2380</td></tr><tr><td>5760 min Summer</td><td>1.583</td><td>0.0</td><td>3056</td></tr><tr><td>7200 min Summer</td><td>1.340</td><td>0.0</td><td>3744</td></tr><tr><td>8640 min Summer</td><td>1.179</td><td>0.0</td><td>4400</td></tr><tr><td>10080 min Summer</td><td>1.066</td><td>0.0</td><td>5088</td></tr><tr><td>15 min Winter</td><td>159.472</td><td>0.0</td><td>18</td></tr></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	83.846	0.496	0.5	11.5	O K	30 min Summer	83.984	0.634	0.6	14.7	O K	60 min Summer	84.104	0.754	0.6	17.6	O K	120 min Summer	84.173	0.823	0.6	19.0	O K	180 min Summer	84.285	0.935	0.6	19.4	O K	240 min Summer	84.205	0.855	0.6	19.3	O K	360 min Summer	84.159	0.809	0.6	18.8	O K	480 min Summer	84.131	0.781	0.6	18.2	O K	600 min Summer	84.102	0.752	0.6	17.5	O K	720 min Summer	84.073	0.723	0.6	16.8	O K	960 min Summer	84.018	0.668	0.6	15.5	O K	1440 min Summer	83.917	0.567	0.5	13.2	O K	2160 min Summer	83.791	0.441	0.5	10.3	O K	2880 min Summer	83.693	0.343	0.5	8.0	O K	4320 min Summer	83.552	0.202	0.4	4.7	O K	5760 min Summer	83.465	0.115	0.4	2.7	O K	7200 min Summer	83.418	0.068	0.4	1.6	O K	8640 min Summer	83.399	0.049	0.4	1.1	O K	10080 min Summer	83.395	0.045	0.3	1.0	O K	15 min Winter	83.846	0.496	0.5	11.5	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	159.472	0.0	19	30 min Summer	103.883	0.0	33	60 min Summer	64.175	0.0	62	120 min Summer	37.442	0.0	122	180 min Summer	27.313	0.0	180	240 min Summer	21.814	0.0	230	360 min Summer	15.842	0.0	286	480 min Summer	12.584	0.0	350	600 min Summer	10.503	0.0	418	720 min Summer	9.048	0.0	486	960 min Summer	7.132	0.0	626	1440 min Summer	5.062	0.0	894	2160 min Summer	3.582	0.0	1280	2880 min Summer	2.807	0.0	1668	4320 min Summer	1.998	0.0	2380	5760 min Summer	1.583	0.0	3056	7200 min Summer	1.340	0.0	3744	8640 min Summer	1.179	0.0	4400	10080 min Summer	1.066	0.0	5088	15 min Winter	159.472	0.0	18
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status																																																																																																																																																																																																																		
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Woods Hardwick		Page 2			
15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows SA-03_A				
Date 06/11/2023 File PLOT 3 - SOAKAWAY.SRCX	Designed by ShD Checked by				
Micro Drainage Source Control 2018.1.1					
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	83.984	0.634	0.6	14.8	O K
60 min Winter	84.106	0.756	0.6	17.6	O K
120 min Winter	84.181	0.831	0.6	19.1	O K
180 min Winter	84.443	1.093	0.6	19.6	O K
240 min Winter	84.404	1.054	0.6	19.5	O K
360 min Winter	84.163	0.813	0.6	18.9	O K
480 min Winter	84.130	0.780	0.6	18.1	O K
600 min Winter	84.093	0.743	0.6	17.3	O K
720 min Winter	84.056	0.706	0.6	16.4	O K
960 min Winter	83.982	0.632	0.6	14.7	O K
1440 min Winter	83.847	0.497	0.5	11.6	O K
2160 min Winter	83.684	0.334	0.5	7.8	O K
2880 min Winter	83.563	0.213	0.4	5.0	O K
4320 min Winter	83.415	0.065	0.4	1.5	O K
5760 min Winter	83.393	0.043	0.3	1.0	O K
7200 min Winter	83.386	0.036	0.3	0.8	O K
8640 min Winter	83.382	0.032	0.3	0.7	O K
10080 min Winter	83.379	0.029	0.2	0.7	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	103.883	0.0	33		
60 min Winter	64.175	0.0	62		
120 min Winter	37.442	0.0	118		
180 min Winter	27.313	0.0	176		
240 min Winter	21.814	0.0	230		
360 min Winter	15.842	0.0	292		
480 min Winter	12.584	0.0	368		
600 min Winter	10.503	0.0	446		
720 min Winter	9.048	0.0	520		
960 min Winter	7.132	0.0	672		
1440 min Winter	5.062	0.0	952		
2160 min Winter	3.582	0.0	1344		
2880 min Winter	2.807	0.0	1728		
4320 min Winter	1.998	0.0	2332		
5760 min Winter	1.583	0.0	2936		
7200 min Winter	1.340	0.0	3672		
8640 min Winter	1.179	0.0	4400		
10080 min Winter	1.066	0.0	5144		
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15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows SA-03_A	
Date 06/11/2023 File PLOT 3 - SOAKAWAY.SRCX	Designed by ShD Checked by	
Micro Drainage Source Control 2018.1.1		

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 459339 237869 SP 59339 37869
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.030

	Time (mins)	Area
From:	To:	(ha)
	0	4 0.030

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Woods Hardwick		Page 4
15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows SA-03_A	
Date 06/11/2023 File PLOT 3 - SOAKAWAY.SRCX	Designed by ShD Checked by	
Micro Drainage Source Control 2018.1.1		

Model Details

Storage is Online Cover Level (m) 85.050

Cellular Storage Structure

Invert Level (m) 83.350 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.11000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.11000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	24.5	24.5	0.900	0.0	41.3
0.800	24.5	40.3			

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Woods Hardwick		Page 1
15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows SA 04_A	
Date 06/11/2023 File PLOT 4 - SOAKAWAY.SRCX	Designed by ShD Checked by	
Micro Drainage Source Control 2018.1.1		

Summary of Results for 30 year Return Period (+35%)

Half Drain Time : 74 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m ³)	Status
15 min Summer	82.939	0.209	1.2	7.1	O K
30 min Summer	82.983	0.253	1.2	8.7	O K
60 min Summer	83.006	0.276	1.2	9.4	O K
120 min Summer	82.998	0.268	1.2	9.2	O K
180 min Summer	82.984	0.254	1.2	8.7	O K
240 min Summer	82.968	0.238	1.2	8.1	O K
360 min Summer	82.935	0.205	1.2	7.0	O K
480 min Summer	82.906	0.176	1.1	6.0	O K
600 min Summer	82.879	0.149	1.1	5.1	O K
720 min Summer	82.856	0.126	1.1	4.3	O K
960 min Summer	82.819	0.089	1.1	3.1	O K
1440 min Summer	82.780	0.050	1.1	1.7	O K
2160 min Summer	82.767	0.037	0.8	1.3	O K
2880 min Summer	82.760	0.030	0.6	1.0	O K
4320 min Summer	82.752	0.022	0.5	0.7	O K
5760 min Summer	82.748	0.018	0.4	0.6	O K
7200 min Summer	82.745	0.015	0.3	0.5	O K
8640 min Summer	82.744	0.014	0.3	0.5	O K
10080 min Summer	82.742	0.012	0.3	0.4	O K
15 min Winter	82.939	0.209	1.2	7.2	O K
30 min Winter	82.984	0.254	1.2	8.7	O K
60 min Winter	83.008	0.278	1.2	9.5	O K
120 min Winter	82.995	0.265	1.2	9.1	O K
180 min Winter	82.974	0.244	1.2	8.3	O K
240 min Winter	82.950	0.220	1.2	7.5	O K
360 min Winter	82.904	0.174	1.1	5.9	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Time-Peak (mins)
15 min Summer	118.767	0.0	17
30 min Summer	76.565	0.0	32
60 min Summer	47.170	0.0	60
120 min Summer	27.851	0.0	90
180 min Summer	20.380	0.0	124
240 min Summer	16.295	0.0	158
360 min Summer	11.848	0.0	224
480 min Summer	9.435	0.0	290
600 min Summer	7.897	0.0	352
720 min Summer	6.822	0.0	412
960 min Summer	5.405	0.0	530
1440 min Summer	3.866	0.0	738
2160 min Summer	2.764	0.0	1104
2880 min Summer	2.185	0.0	1468
4320 min Summer	1.582	0.0	2204
5760 min Summer	1.271	0.0	2920
7200 min Summer	1.086	0.0	3632
8640 min Summer	0.963	0.0	4368
10080 min Summer	0.875	0.0	5008
15 min Winter	118.767	0.0	17
30 min Winter	76.565	0.0	31
60 min Winter	47.170	0.0	58
120 min Winter	27.851	0.0	94
180 min Winter	20.380	0.0	132
240 min Winter	16.295	0.0	168
360 min Winter	11.848	0.0	238

Woods Hardwick		Page 2
15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows SA 04_A	
Date 06/11/2023 File PLOT 4 - SOAKAWAY.SRCX	Designed by ShD Checked by	
Micro Drainage		
Source Control 2018.1.1		

Summary of Results for 30 year Return Period (+35%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
480 min Winter	82.863	0.133	1.1	4.5	O K
600 min Winter	82.828	0.098	1.1	3.4	O K
720 min Winter	82.802	0.072	1.1	2.4	O K
960 min Winter	82.777	0.047	1.0	1.6	O K
1440 min Winter	82.764	0.034	0.7	1.2	O K
2160 min Winter	82.755	0.025	0.5	0.8	O K
2880 min Winter	82.750	0.020	0.4	0.7	O K
4320 min Winter	82.744	0.014	0.3	0.5	O K
5760 min Winter	82.741	0.011	0.2	0.4	O K
7200 min Winter	82.740	0.010	0.2	0.3	O K
8640 min Winter	82.739	0.009	0.2	0.3	O K
10080 min Winter	82.738	0.008	0.2	0.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
480 min Winter	9.435	0.0	302
600 min Winter	7.897	0.0	362
720 min Winter	6.822	0.0	414
960 min Winter	5.405	0.0	508
1440 min Winter	3.866	0.0	738
2160 min Winter	2.764	0.0	1092
2880 min Winter	2.185	0.0	1456
4320 min Winter	1.582	0.0	2152
5760 min Winter	1.271	0.0	2944
7200 min Winter	1.086	0.0	3632
8640 min Winter	0.963	0.0	4288
10080 min Winter	0.875	0.0	5144

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Micro Drainage		
Source Control 2018.1.1		

Rainfall Details

Rainfall Model	FEH	Winter Storms	Yes
Return Period (years)	30	Cv (Summer)	1.000
FEH Rainfall Version	2013	Cv (Winter)	1.000
Site Location	GB 459339 237869 SP 59339 37869	Shortest Storm (mins)	15
Data Type	Point	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+35

Time Area Diagram

Total Area (ha) 0.027

Time (mins)		Area
From:	To:	(ha)
0	4	0.027

Model Details

Storage is Online Cover Level (m) 84.560

Cellular Storage Structure

Invert Level (m) 82.730 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.20500 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.20500

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	36.0	36.0	0.400	36.0	45.6	0.500	0.0	46.8

Woods Hardwick					Page 1																																																																																																																																																																																																																		
15-17 Goldington Road Bedford MK40 3NH			190367 - Oakleigh Meadows SA 04_A																																																																																																																																																																																																																				
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Micro Drainage			Source Control 2018.1.1																																																																																																																																																																																																																				
Summary of Results for 100 year Return Period (+40%) Half Drain Time : 105 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>83.017</td><td>0.287</td><td>1.2</td><td>9.8</td><td>O K</td></tr><tr><td>30 min Summer</td><td>83.086</td><td>0.356</td><td>1.3</td><td>12.2</td><td>O K</td></tr><tr><td>60 min Summer</td><td>83.129</td><td>0.399</td><td>1.3</td><td>13.7</td><td>O K</td></tr><tr><td>120 min Summer</td><td>83.120</td><td>0.390</td><td>1.3</td><td>13.3</td><td>O K</td></tr><tr><td>180 min Summer</td><td>83.104</td><td>0.374</td><td>1.3</td><td>12.8</td><td>O K</td></tr><tr><td>240 min Summer</td><td>83.086</td><td>0.356</td><td>1.3</td><td>12.2</td><td>O K</td></tr><tr><td>360 min Summer</td><td>83.051</td><td>0.321</td><td>1.2</td><td>11.0</td><td>O K</td></tr><tr><td>480 min Summer</td><td>83.016</td><td>0.286</td><td>1.2</td><td>9.8</td><td>O K</td></tr><tr><td>600 min Summer</td><td>82.983</td><td>0.253</td><td>1.2</td><td>8.6</td><td>O K</td></tr><tr><td>720 min Summer</td><td>82.952</td><td>0.222</td><td>1.2</td><td>7.6</td><td>O K</td></tr><tr><td>960 min Summer</td><td>82.899</td><td>0.169</td><td>1.1</td><td>5.8</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>82.823</td><td>0.093</td><td>1.1</td><td>3.2</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>82.778</td><td>0.048</td><td>1.0</td><td>1.6</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>82.768</td><td>0.038</td><td>0.8</td><td>1.3</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>82.758</td><td>0.028</td><td>0.6</td><td>0.9</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>82.752</td><td>0.022</td><td>0.5</td><td>0.8</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>82.749</td><td>0.019</td><td>0.4</td><td>0.6</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>82.747</td><td>0.017</td><td>0.4</td><td>0.6</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>82.745</td><td>0.015</td><td>0.3</td><td>0.5</td><td>O K</td></tr><tr><td>15 min Winter</td><td>83.017</td><td>0.287</td><td>1.2</td><td>9.8</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>159.472</td><td>0.0</td><td>18</td></tr><tr><td>30 min Summer</td><td>103.883</td><td>0.0</td><td>32</td></tr><tr><td>60 min Summer</td><td>64.175</td><td>0.0</td><td>60</td></tr><tr><td>120 min Summer</td><td>37.442</td><td>0.0</td><td>98</td></tr><tr><td>180 min Summer</td><td>27.313</td><td>0.0</td><td>130</td></tr><tr><td>240 min Summer</td><td>21.814</td><td>0.0</td><td>164</td></tr><tr><td>360 min Summer</td><td>15.842</td><td>0.0</td><td>232</td></tr><tr><td>480 min Summer</td><td>12.584</td><td>0.0</td><td>300</td></tr><tr><td>600 min Summer</td><td>10.503</td><td>0.0</td><td>364</td></tr><tr><td>720 min Summer</td><td>9.048</td><td>0.0</td><td>428</td></tr><tr><td>960 min Summer</td><td>7.132</td><td>0.0</td><td>550</td></tr><tr><td>1440 min Summer</td><td>5.062</td><td>0.0</td><td>780</td></tr><tr><td>2160 min Summer</td><td>3.582</td><td>0.0</td><td>1104</td></tr><tr><td>2880 min Summer</td><td>2.807</td><td>0.0</td><td>1468</td></tr><tr><td>4320 min Summer</td><td>1.998</td><td>0.0</td><td>2188</td></tr><tr><td>5760 min Summer</td><td>1.583</td><td>0.0</td><td>2928</td></tr><tr><td>7200 min Summer</td><td>1.340</td><td>0.0</td><td>3608</td></tr><tr><td>8640 min Summer</td><td>1.179</td><td>0.0</td><td>4384</td></tr><tr><td>10080 min Summer</td><td>1.066</td><td>0.0</td><td>5136</td></tr><tr><td>15 min Winter</td><td>159.472</td><td>0.0</td><td>18</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	83.017	0.287	1.2	9.8	O K	30 min Summer	83.086	0.356	1.3	12.2	O K	60 min Summer	83.129	0.399	1.3	13.7	O K	120 min Summer	83.120	0.390	1.3	13.3	O K	180 min Summer	83.104	0.374	1.3	12.8	O K	240 min Summer	83.086	0.356	1.3	12.2	O K	360 min Summer	83.051	0.321	1.2	11.0	O K	480 min Summer	83.016	0.286	1.2	9.8	O K	600 min Summer	82.983	0.253	1.2	8.6	O K	720 min Summer	82.952	0.222	1.2	7.6	O K	960 min Summer	82.899	0.169	1.1	5.8	O K	1440 min Summer	82.823	0.093	1.1	3.2	O K	2160 min Summer	82.778	0.048	1.0	1.6	O K	2880 min Summer	82.768	0.038	0.8	1.3	O K	4320 min Summer	82.758	0.028	0.6	0.9	O K	5760 min Summer	82.752	0.022	0.5	0.8	O K	7200 min Summer	82.749	0.019	0.4	0.6	O K	8640 min Summer	82.747	0.017	0.4	0.6	O K	10080 min Summer	82.745	0.015	0.3	0.5	O K	15 min Winter	83.017	0.287	1.2	9.8	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	159.472	0.0	18	30 min Summer	103.883	0.0	32	60 min Summer	64.175	0.0	60	120 min Summer	37.442	0.0	98	180 min Summer	27.313	0.0	130	240 min Summer	21.814	0.0	164	360 min Summer	15.842	0.0	232	480 min Summer	12.584	0.0	300	600 min Summer	10.503	0.0	364	720 min Summer	9.048	0.0	428	960 min Summer	7.132	0.0	550	1440 min Summer	5.062	0.0	780	2160 min Summer	3.582	0.0	1104	2880 min Summer	2.807	0.0	1468	4320 min Summer	1.998	0.0	2188	5760 min Summer	1.583	0.0	2928	7200 min Summer	1.340	0.0	3608	8640 min Summer	1.179	0.0	4384	10080 min Summer	1.066	0.0	5136	15 min Winter	159.472	0.0	18
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Woods Hardwick		Page 2			
15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows SA 04_A				
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Micro Drainage Source Control 2018.1.1					
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	83.087	0.357	1.3	12.2	O K
60 min Winter	83.132	0.402	1.3	13.8	O K
120 min Winter	83.120	0.390	1.3	13.3	O K
180 min Winter	83.099	0.369	1.3	12.6	O K
240 min Winter	83.075	0.345	1.3	11.8	O K
360 min Winter	83.023	0.293	1.2	10.0	O K
480 min Winter	82.973	0.243	1.2	8.3	O K
600 min Winter	82.928	0.198	1.2	6.8	O K
720 min Winter	82.888	0.158	1.1	5.4	O K
960 min Winter	82.823	0.093	1.1	3.2	O K
1440 min Winter	82.775	0.045	0.9	1.5	O K
2160 min Winter	82.762	0.032	0.7	1.1	O K
2880 min Winter	82.755	0.025	0.5	0.9	O K
4320 min Winter	82.748	0.018	0.4	0.6	O K
5760 min Winter	82.744	0.014	0.3	0.5	O K
7200 min Winter	82.742	0.012	0.3	0.4	O K
8640 min Winter	82.741	0.011	0.2	0.4	O K
10080 min Winter	82.740	0.010	0.2	0.3	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	103.883	0.0	32		
60 min Winter	64.175	0.0	60		
120 min Winter	37.442	0.0	100		
180 min Winter	27.313	0.0	138		
240 min Winter	21.814	0.0	176		
360 min Winter	15.842	0.0	248		
480 min Winter	12.584	0.0	318		
600 min Winter	10.503	0.0	384		
720 min Winter	9.048	0.0	446		
960 min Winter	7.132	0.0	558		
1440 min Winter	5.062	0.0	738		
2160 min Winter	3.582	0.0	1104		
2880 min Winter	2.807	0.0	1456		
4320 min Winter	1.998	0.0	2204		
5760 min Winter	1.583	0.0	2920		
7200 min Winter	1.340	0.0	3576		
8640 min Winter	1.179	0.0	4256		
10080 min Winter	1.066	0.0	4968		
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Date 06/11/2023 File PLOT 4 - SOAKAWAY.SRCX	Designed by ShD Checked by	
Micro Drainage Source Control 2018.1.1		

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 459339 237869 SP 59339 37869
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.027

Time (mins)	Area
From:	To: (ha)
0	4 0.027

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Micro Drainage Source Control 2018.1.1		

Model Details

Storage is Online Cover Level (m) 84.560

Cellular Storage Structure

Invert Level (m) 82.730 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.20500 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.20500

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	36.0	36.0	0.500	0.0	46.8
0.400	36.0	45.6			

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Summary of Results for 30 year Return Period (+35%)

Half Drain Time : 326 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	80.739	0.169	0.4	8.3	O K
30 min Summer	80.784	0.214	0.4	10.6	O K
60 min Summer	80.825	0.255	0.4	12.6	O K
120 min Summer	80.853	0.283	0.4	14.0	O K
180 min Summer	80.863	0.293	0.4	14.5	O K
240 min Summer	80.865	0.295	0.4	14.6	O K
360 min Summer	80.859	0.289	0.4	14.3	O K
480 min Summer	80.852	0.282	0.4	13.9	O K
600 min Summer	80.844	0.274	0.4	13.5	O K
720 min Summer	80.835	0.265	0.4	13.1	O K
960 min Summer	80.817	0.247	0.4	12.2	O K
1440 min Summer	80.782	0.212	0.4	10.5	O K
2160 min Summer	80.736	0.166	0.4	8.2	O K
2880 min Summer	80.701	0.131	0.4	6.4	O K
4320 min Summer	80.651	0.081	0.4	4.0	O K
5760 min Summer	80.625	0.055	0.3	2.7	O K
7200 min Summer	80.617	0.047	0.3	2.3	O K
8640 min Summer	80.612	0.042	0.3	2.1	O K
10080 min Summer	80.609	0.039	0.3	1.9	O K
15 min Winter	80.739	0.169	0.4	8.3	O K
30 min Winter	80.784	0.214	0.4	10.6	O K
60 min Winter	80.825	0.255	0.4	12.6	O K
120 min Winter	80.854	0.284	0.4	14.0	O K
180 min Winter	80.864	0.294	0.4	14.5	O K
240 min Winter	80.866	0.296	0.4	14.6	O K
360 min Winter	80.860	0.290	0.4	14.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	118.767	0.0	19
30 min Summer	76.565	0.0	33
60 min Summer	47.170	0.0	62
120 min Summer	27.851	0.0	122
180 min Summer	20.380	0.0	182
240 min Summer	16.295	0.0	240
360 min Summer	11.848	0.0	306
480 min Summer	9.435	0.0	366
600 min Summer	7.897	0.0	430
720 min Summer	6.822	0.0	498
960 min Summer	5.405	0.0	634
1440 min Summer	3.866	0.0	906
2160 min Summer	2.764	0.0	1296
2880 min Summer	2.185	0.0	1668
4320 min Summer	1.582	0.0	2336
5760 min Summer	1.271	0.0	3000
7200 min Summer	1.086	0.0	3680
8640 min Summer	0.963	0.0	4408
10080 min Summer	0.875	0.0	5144
15 min Winter	118.767	0.0	18
30 min Winter	76.565	0.0	33
60 min Winter	47.170	0.0	62
120 min Winter	27.851	0.0	120
180 min Winter	20.380	0.0	176
240 min Winter	16.295	0.0	232
360 min Winter	11.848	0.0	336

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15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows SA-05_A	
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Micro Drainage		
Source Control 2018.1.1		

Summary of Results for 30 year Return Period (+35%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
480 min Winter	80.850	0.280	0.4	13.8	O K
600 min Winter	80.839	0.269	0.4	13.3	O K
720 min Winter	80.828	0.258	0.4	12.7	O K
960 min Winter	80.803	0.233	0.4	11.5	O K
1440 min Winter	80.753	0.183	0.4	9.1	O K
2160 min Winter	80.692	0.122	0.4	6.0	O K
2880 min Winter	80.648	0.078	0.4	3.9	O K
4320 min Winter	80.615	0.045	0.3	2.2	O K
5760 min Winter	80.607	0.037	0.3	1.8	O K
7200 min Winter	80.601	0.031	0.2	1.5	O K
8640 min Winter	80.598	0.028	0.2	1.4	O K
10080 min Winter	80.595	0.025	0.2	1.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
480 min Winter	9.435	0.0	378
600 min Winter	7.897	0.0	454
720 min Winter	6.822	0.0	530
960 min Winter	5.405	0.0	680
1440 min Winter	3.866	0.0	964
2160 min Winter	2.764	0.0	1340
2880 min Winter	2.185	0.0	1672
4320 min Winter	1.582	0.0	2252
5760 min Winter	1.271	0.0	2992
7200 min Winter	1.086	0.0	3744
8640 min Winter	0.963	0.0	4416
10080 min Winter	0.875	0.0	5152

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15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows SA-05_A	
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Micro Drainage		
Source Control 2018.1.1		

Rainfall Details

Rainfall Model	FEH	Winter Storms	Yes
Return Period (years)	30	Cv (Summer)	1.000
FEH Rainfall Version	2013	Cv (Winter)	1.000
Site Location	GB 459339 237869 SP 59339 37869	Shortest Storm (mins)	15
Data Type	Point	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+35

Time Area Diagram

Total Area (ha) 0.029

Time (mins)		Area
From:	To:	(ha)
0	4	0.029

Model Details

Storage is Online Cover Level (m) 81.570

Cellular Storage Structure

Invert Level (m) 80.570 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.04700 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.04700

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	52.0	52.0	0.400	52.0	63.5	0.500	0.0	65.0

Woods Hardwick				Page 1																																																																																																																																																																																																																			
15-17 Goldington Road Bedford MK40 3NH		190367 - Oakleigh Meadows SA-05_A																																																																																																																																																																																																																					
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Summary of Results for 100 year Return Period (+40%) Half Drain Time : 452 minutes. <table><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr><tr><td>15 min Summer</td><td>80.798</td><td>0.228</td><td>0.4</td><td>11.3</td><td>O K</td></tr><tr><td>30 min Summer</td><td>80.863</td><td>0.293</td><td>0.4</td><td>14.5</td><td>O K</td></tr><tr><td>60 min Summer</td><td>80.923</td><td>0.353</td><td>0.4</td><td>17.4</td><td>O K</td></tr><tr><td>120 min Summer</td><td>80.962</td><td>0.392</td><td>0.4</td><td>19.4</td><td>O K</td></tr><tr><td>180 min Summer</td><td>80.980</td><td>0.410</td><td>0.4</td><td>20.2</td><td>O K</td></tr><tr><td>240 min Summer</td><td>80.990</td><td>0.420</td><td>0.4</td><td>20.6</td><td>O K</td></tr><tr><td>360 min Summer</td><td>80.987</td><td>0.417</td><td>0.4</td><td>20.5</td><td>O K</td></tr><tr><td>480 min Summer</td><td>80.975</td><td>0.405</td><td>0.4</td><td>20.0</td><td>O K</td></tr><tr><td>600 min Summer</td><td>80.964</td><td>0.394</td><td>0.4</td><td>19.5</td><td>O K</td></tr><tr><td>720 min Summer</td><td>80.954</td><td>0.384</td><td>0.4</td><td>18.9</td><td>O K</td></tr><tr><td>960 min Summer</td><td>80.931</td><td>0.361</td><td>0.4</td><td>17.9</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>80.888</td><td>0.318</td><td>0.4</td><td>15.7</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>80.831</td><td>0.261</td><td>0.4</td><td>12.9</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>80.784</td><td>0.214</td><td>0.4</td><td>10.5</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>80.711</td><td>0.141</td><td>0.4</td><td>7.0</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>80.664</td><td>0.094</td><td>0.4</td><td>4.7</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>80.636</td><td>0.066</td><td>0.4</td><td>3.3</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>80.622</td><td>0.052</td><td>0.3</td><td>2.6</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>80.617</td><td>0.047</td><td>0.3</td><td>2.3</td><td>O K</td></tr><tr><td>15 min Winter</td><td>80.798</td><td>0.228</td><td>0.4</td><td>11.3</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>159.472</td><td>0.0</td><td>19</td></tr><tr><td>30 min Summer</td><td>103.883</td><td>0.0</td><td>33</td></tr><tr><td>60 min Summer</td><td>64.175</td><td>0.0</td><td>64</td></tr><tr><td>120 min Summer</td><td>37.442</td><td>0.0</td><td>122</td></tr><tr><td>180 min Summer</td><td>27.313</td><td>0.0</td><td>182</td></tr><tr><td>240 min Summer</td><td>21.814</td><td>0.0</td><td>242</td></tr><tr><td>360 min Summer</td><td>15.842</td><td>0.0</td><td>358</td></tr><tr><td>480 min Summer</td><td>12.584</td><td>0.0</td><td>408</td></tr><tr><td>600 min Summer</td><td>10.503</td><td>0.0</td><td>468</td></tr><tr><td>720 min Summer</td><td>9.048</td><td>0.0</td><td>528</td></tr><tr><td>960 min Summer</td><td>7.132</td><td>0.0</td><td>664</td></tr><tr><td>1440 min Summer</td><td>5.062</td><td>0.0</td><td>936</td></tr><tr><td>2160 min Summer</td><td>3.582</td><td>0.0</td><td>1340</td></tr><tr><td>2880 min Summer</td><td>2.807</td><td>0.0</td><td>1728</td></tr><tr><td>4320 min Summer</td><td>1.998</td><td>0.0</td><td>2460</td></tr><tr><td>5760 min Summer</td><td>1.583</td><td>0.0</td><td>3120</td></tr><tr><td>7200 min Summer</td><td>1.340</td><td>0.0</td><td>3816</td></tr><tr><td>8640 min Summer</td><td>1.179</td><td>0.0</td><td>4416</td></tr><tr><td>10080 min Summer</td><td>1.066</td><td>0.0</td><td>5144</td></tr><tr><td>15 min Winter</td><td>159.472</td><td>0.0</td><td>18</td></tr></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	80.798	0.228	0.4	11.3	O K	30 min Summer	80.863	0.293	0.4	14.5	O K	60 min Summer	80.923	0.353	0.4	17.4	O K	120 min Summer	80.962	0.392	0.4	19.4	O K	180 min Summer	80.980	0.410	0.4	20.2	O K	240 min Summer	80.990	0.420	0.4	20.6	O K	360 min Summer	80.987	0.417	0.4	20.5	O K	480 min Summer	80.975	0.405	0.4	20.0	O K	600 min Summer	80.964	0.394	0.4	19.5	O K	720 min Summer	80.954	0.384	0.4	18.9	O K	960 min Summer	80.931	0.361	0.4	17.9	O K	1440 min Summer	80.888	0.318	0.4	15.7	O K	2160 min Summer	80.831	0.261	0.4	12.9	O K	2880 min Summer	80.784	0.214	0.4	10.5	O K	4320 min Summer	80.711	0.141	0.4	7.0	O K	5760 min Summer	80.664	0.094	0.4	4.7	O K	7200 min Summer	80.636	0.066	0.4	3.3	O K	8640 min Summer	80.622	0.052	0.3	2.6	O K	10080 min Summer	80.617	0.047	0.3	2.3	O K	15 min Winter	80.798	0.228	0.4	11.3	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	159.472	0.0	19	30 min Summer	103.883	0.0	33	60 min Summer	64.175	0.0	64	120 min Summer	37.442	0.0	122	180 min Summer	27.313	0.0	182	240 min Summer	21.814	0.0	242	360 min Summer	15.842	0.0	358	480 min Summer	12.584	0.0	408	600 min Summer	10.503	0.0	468	720 min Summer	9.048	0.0	528	960 min Summer	7.132	0.0	664	1440 min Summer	5.062	0.0	936	2160 min Summer	3.582	0.0	1340	2880 min Summer	2.807	0.0	1728	4320 min Summer	1.998	0.0	2460	5760 min Summer	1.583	0.0	3120	7200 min Summer	1.340	0.0	3816	8640 min Summer	1.179	0.0	4416	10080 min Summer	1.066	0.0	5144	15 min Winter	159.472	0.0	18
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status																																																																																																																																																																																																																		
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Micro Drainage Source Control 2018.1.1					
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	80.863	0.293	0.4	14.5	O K
60 min Winter	80.923	0.353	0.4	17.5	O K
120 min Winter	80.963	0.393	0.4	19.4	O K
180 min Winter	80.982	0.412	0.4	20.3	O K
240 min Winter	80.994	0.424	0.4	20.7	O K
360 min Winter	80.993	0.423	0.4	20.7	O K
480 min Winter	80.978	0.408	0.4	20.1	O K
600 min Winter	80.964	0.394	0.4	19.5	O K
720 min Winter	80.951	0.381	0.4	18.8	O K
960 min Winter	80.923	0.353	0.4	17.4	O K
1440 min Winter	80.864	0.294	0.4	14.5	O K
2160 min Winter	80.786	0.216	0.4	10.7	O K
2880 min Winter	80.724	0.154	0.4	7.6	O K
4320 min Winter	80.640	0.070	0.4	3.5	O K
5760 min Winter	80.615	0.045	0.3	2.2	O K
7200 min Winter	80.609	0.039	0.3	1.9	O K
8640 min Winter	80.604	0.034	0.2	1.7	O K
10080 min Winter	80.601	0.031	0.2	1.5	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	103.883	0.0	33		
60 min Winter	64.175	0.0	62		
120 min Winter	37.442	0.0	120		
180 min Winter	27.313	0.0	178		
240 min Winter	21.814	0.0	234		
360 min Winter	15.842	0.0	346		
480 min Winter	12.584	0.0	448		
600 min Winter	10.503	0.0	478		
720 min Winter	9.048	0.0	554		
960 min Winter	7.132	0.0	704		
1440 min Winter	5.062	0.0	998		
2160 min Winter	3.582	0.0	1408		
2880 min Winter	2.807	0.0	1788		
4320 min Winter	1.998	0.0	2424		
5760 min Winter	1.583	0.0	3000		
7200 min Winter	1.340	0.0	3680		
8640 min Winter	1.179	0.0	4408		
10080 min Winter	1.066	0.0	5144		
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Micro Drainage Source Control 2018.1.1		

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 459339 237869 SP 59339 37869
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.029

	Time (mins)	Area
From:	To:	(ha)
	0	4 0.029

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15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows SA-05_A	
Date 06/11/2023 File PLOT 5 - SOAKAWAY.SRCX	Designed by ShD Checked by	
Micro Drainage Source Control 2018.1.1		

Model Details

Storage is Online Cover Level (m) 81.570

Cellular Storage Structure

Invert Level (m) 80.570 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.04700 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.04700

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	52.0	52.0	0.500	0.0	65.0
0.400	52.0	63.5			

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Summary of Results for 30 year Return Period (+35%)

Half Drain Time : 326 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	80.869	0.169	0.4	8.3	O K
30 min Summer	80.914	0.214	0.4	10.6	O K
60 min Summer	80.955	0.255	0.4	12.6	O K
120 min Summer	80.983	0.283	0.4	14.0	O K
180 min Summer	80.993	0.293	0.4	14.5	O K
240 min Summer	80.995	0.295	0.4	14.6	O K
360 min Summer	80.989	0.289	0.4	14.3	O K
480 min Summer	80.982	0.282	0.4	13.9	O K
600 min Summer	80.974	0.274	0.4	13.5	O K
720 min Summer	80.965	0.265	0.4	13.1	O K
960 min Summer	80.947	0.247	0.4	12.2	O K
1440 min Summer	80.912	0.212	0.4	10.5	O K
2160 min Summer	80.866	0.166	0.4	8.2	O K
2880 min Summer	80.831	0.131	0.4	6.4	O K
4320 min Summer	80.781	0.081	0.4	4.0	O K
5760 min Summer	80.755	0.055	0.3	2.7	O K
7200 min Summer	80.747	0.047	0.3	2.3	O K
8640 min Summer	80.742	0.042	0.3	2.1	O K
10080 min Summer	80.739	0.039	0.3	1.9	O K
15 min Winter	80.869	0.169	0.4	8.3	O K
30 min Winter	80.914	0.214	0.4	10.6	O K
60 min Winter	80.955	0.255	0.4	12.6	O K
120 min Winter	80.984	0.284	0.4	14.0	O K
180 min Winter	80.994	0.294	0.4	14.5	O K
240 min Winter	80.996	0.296	0.4	14.6	O K
360 min Winter	80.990	0.290	0.4	14.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	118.767	0.0	19
30 min Summer	76.565	0.0	33
60 min Summer	47.170	0.0	62
120 min Summer	27.851	0.0	122
180 min Summer	20.380	0.0	182
240 min Summer	16.295	0.0	240
360 min Summer	11.848	0.0	306
480 min Summer	9.435	0.0	366
600 min Summer	7.897	0.0	430
720 min Summer	6.822	0.0	498
960 min Summer	5.405	0.0	634
1440 min Summer	3.866	0.0	906
2160 min Summer	2.764	0.0	1296
2880 min Summer	2.185	0.0	1668
4320 min Summer	1.582	0.0	2336
5760 min Summer	1.271	0.0	3000
7200 min Summer	1.086	0.0	3680
8640 min Summer	0.963	0.0	4408
10080 min Summer	0.875	0.0	5144
15 min Winter	118.767	0.0	18
30 min Winter	76.565	0.0	33
60 min Winter	47.170	0.0	62
120 min Winter	27.851	0.0	120
180 min Winter	20.380	0.0	176
240 min Winter	16.295	0.0	232
360 min Winter	11.848	0.0	336

Summary of Results for 30 year Return Period (+35%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
480 min Winter	80.980	0.280	0.4	13.8	O K
600 min Winter	80.969	0.269	0.4	13.3	O K
720 min Winter	80.958	0.258	0.4	12.7	O K
960 min Winter	80.933	0.233	0.4	11.5	O K
1440 min Winter	80.883	0.183	0.4	9.1	O K
2160 min Winter	80.822	0.122	0.4	6.0	O K
2880 min Winter	80.778	0.078	0.4	3.9	O K
4320 min Winter	80.745	0.045	0.3	2.2	O K
5760 min Winter	80.737	0.037	0.3	1.8	O K
7200 min Winter	80.731	0.031	0.2	1.5	O K
8640 min Winter	80.728	0.028	0.2	1.4	O K
10080 min Winter	80.725	0.025	0.2	1.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
480 min Winter	9.435	0.0	378
600 min Winter	7.897	0.0	454
720 min Winter	6.822	0.0	530
960 min Winter	5.405	0.0	680
1440 min Winter	3.866	0.0	964
2160 min Winter	2.764	0.0	1340
2880 min Winter	2.185	0.0	1672
4320 min Winter	1.582	0.0	2252
5760 min Winter	1.271	0.0	2992
7200 min Winter	1.086	0.0	3744
8640 min Winter	0.963	0.0	4416
10080 min Winter	0.875	0.0	5152

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Date 06/11/2023 File PLOT 6 - SOAKAWAY.SRCX	Designed by ShD Checked by	
Micro Drainage		
Source Control 2018.1.1		

Rainfall Details

Rainfall Model	FEH	Winter Storms	Yes
Return Period (years)	30	Cv (Summer)	1.000
FEH Rainfall Version	2013	Cv (Winter)	1.000
Site Location	GB 459339 237869 SP 59339 37869	Shortest Storm (mins)	15
Data Type	Point	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+35

Time Area Diagram

Total Area (ha) 0.029

Time (mins)		Area
From:	To:	(ha)
0	4	0.029

Model Details

Storage is Online Cover Level (m) 81.750

Cellular Storage Structure

Invert Level (m) 80.700 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.04700 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.04700

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	52.0	52.0	0.400	52.0	63.5	0.500	0.0	65.0

Woods Hardwick		Page 1																																																																																																																																																																																																																			
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Summary of Results for 100 year Return Period (+40%) Half Drain Time : 452 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>80.928</td><td>0.228</td><td>0.4</td><td>11.3</td><td>O K</td></tr><tr><td>30 min Summer</td><td>80.993</td><td>0.293</td><td>0.4</td><td>14.5</td><td>O K</td></tr><tr><td>60 min Summer</td><td>81.053</td><td>0.353</td><td>0.4</td><td>17.4</td><td>O K</td></tr><tr><td>120 min Summer</td><td>81.092</td><td>0.392</td><td>0.4</td><td>19.4</td><td>O K</td></tr><tr><td>180 min Summer</td><td>81.110</td><td>0.410</td><td>0.4</td><td>20.2</td><td>O K</td></tr><tr><td>240 min Summer</td><td>81.120</td><td>0.420</td><td>0.4</td><td>20.6</td><td>O K</td></tr><tr><td>360 min Summer</td><td>81.117</td><td>0.417</td><td>0.4</td><td>20.5</td><td>O K</td></tr><tr><td>480 min Summer</td><td>81.105</td><td>0.405</td><td>0.4</td><td>20.0</td><td>O K</td></tr><tr><td>600 min Summer</td><td>81.094</td><td>0.394</td><td>0.4</td><td>19.5</td><td>O K</td></tr><tr><td>720 min Summer</td><td>81.084</td><td>0.384</td><td>0.4</td><td>18.9</td><td>O K</td></tr><tr><td>960 min Summer</td><td>81.061</td><td>0.361</td><td>0.4</td><td>17.9</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>81.018</td><td>0.318</td><td>0.4</td><td>15.7</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>80.961</td><td>0.261</td><td>0.4</td><td>12.9</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>80.914</td><td>0.214</td><td>0.4</td><td>10.5</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>80.841</td><td>0.141</td><td>0.4</td><td>7.0</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>80.794</td><td>0.094</td><td>0.4</td><td>4.7</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>80.766</td><td>0.066</td><td>0.4</td><td>3.3</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>80.752</td><td>0.052</td><td>0.3</td><td>2.6</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>80.747</td><td>0.047</td><td>0.3</td><td>2.3</td><td>O K</td></tr><tr><td>15 min Winter</td><td>80.928</td><td>0.228</td><td>0.4</td><td>11.3</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>159.472</td><td>0.0</td><td>19</td></tr><tr><td>30 min Summer</td><td>103.883</td><td>0.0</td><td>33</td></tr><tr><td>60 min Summer</td><td>64.175</td><td>0.0</td><td>64</td></tr><tr><td>120 min Summer</td><td>37.442</td><td>0.0</td><td>122</td></tr><tr><td>180 min Summer</td><td>27.313</td><td>0.0</td><td>182</td></tr><tr><td>240 min Summer</td><td>21.814</td><td>0.0</td><td>242</td></tr><tr><td>360 min Summer</td><td>15.842</td><td>0.0</td><td>358</td></tr><tr><td>480 min Summer</td><td>12.584</td><td>0.0</td><td>408</td></tr><tr><td>600 min Summer</td><td>10.503</td><td>0.0</td><td>468</td></tr><tr><td>720 min Summer</td><td>9.048</td><td>0.0</td><td>528</td></tr><tr><td>960 min Summer</td><td>7.132</td><td>0.0</td><td>664</td></tr><tr><td>1440 min Summer</td><td>5.062</td><td>0.0</td><td>936</td></tr><tr><td>2160 min Summer</td><td>3.582</td><td>0.0</td><td>1340</td></tr><tr><td>2880 min Summer</td><td>2.807</td><td>0.0</td><td>1728</td></tr><tr><td>4320 min Summer</td><td>1.998</td><td>0.0</td><td>2460</td></tr><tr><td>5760 min Summer</td><td>1.583</td><td>0.0</td><td>3120</td></tr><tr><td>7200 min Summer</td><td>1.340</td><td>0.0</td><td>3816</td></tr><tr><td>8640 min Summer</td><td>1.179</td><td>0.0</td><td>4416</td></tr><tr><td>10080 min Summer</td><td>1.066</td><td>0.0</td><td>5144</td></tr><tr><td>15 min Winter</td><td>159.472</td><td>0.0</td><td>18</td></tr></tbody></table>				Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	80.928	0.228	0.4	11.3	O K	30 min Summer	80.993	0.293	0.4	14.5	O K	60 min Summer	81.053	0.353	0.4	17.4	O K	120 min Summer	81.092	0.392	0.4	19.4	O K	180 min Summer	81.110	0.410	0.4	20.2	O K	240 min Summer	81.120	0.420	0.4	20.6	O K	360 min Summer	81.117	0.417	0.4	20.5	O K	480 min Summer	81.105	0.405	0.4	20.0	O K	600 min Summer	81.094	0.394	0.4	19.5	O K	720 min Summer	81.084	0.384	0.4	18.9	O K	960 min Summer	81.061	0.361	0.4	17.9	O K	1440 min Summer	81.018	0.318	0.4	15.7	O K	2160 min Summer	80.961	0.261	0.4	12.9	O K	2880 min Summer	80.914	0.214	0.4	10.5	O K	4320 min Summer	80.841	0.141	0.4	7.0	O K	5760 min Summer	80.794	0.094	0.4	4.7	O K	7200 min Summer	80.766	0.066	0.4	3.3	O K	8640 min Summer	80.752	0.052	0.3	2.6	O K	10080 min Summer	80.747	0.047	0.3	2.3	O K	15 min Winter	80.928	0.228	0.4	11.3	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	159.472	0.0	19	30 min Summer	103.883	0.0	33	60 min Summer	64.175	0.0	64	120 min 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Woods Hardwick		Page 2			
15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows SA 06_A				
Date 06/11/2023 File PLOT 6 - SOAKAWAY.SRCX	Designed by ShD Checked by				
Micro Drainage Source Control 2018.1.1					
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	80.993	0.293	0.4	14.5	O K
60 min Winter	81.053	0.353	0.4	17.5	O K
120 min Winter	81.093	0.393	0.4	19.4	O K
180 min Winter	81.112	0.412	0.4	20.3	O K
240 min Winter	81.124	0.424	0.4	20.7	O K
360 min Winter	81.123	0.423	0.4	20.7	O K
480 min Winter	81.108	0.408	0.4	20.1	O K
600 min Winter	81.094	0.394	0.4	19.5	O K
720 min Winter	81.081	0.381	0.4	18.8	O K
960 min Winter	81.053	0.353	0.4	17.4	O K
1440 min Winter	80.994	0.294	0.4	14.5	O K
2160 min Winter	80.916	0.216	0.4	10.7	O K
2880 min Winter	80.854	0.154	0.4	7.6	O K
4320 min Winter	80.770	0.070	0.4	3.5	O K
5760 min Winter	80.745	0.045	0.3	2.2	O K
7200 min Winter	80.739	0.039	0.3	1.9	O K
8640 min Winter	80.734	0.034	0.2	1.7	O K
10080 min Winter	80.731	0.031	0.2	1.5	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	103.883	0.0	33		
60 min Winter	64.175	0.0	62		
120 min Winter	37.442	0.0	120		
180 min Winter	27.313	0.0	178		
240 min Winter	21.814	0.0	234		
360 min Winter	15.842	0.0	346		
480 min Winter	12.584	0.0	448		
600 min Winter	10.503	0.0	478		
720 min Winter	9.048	0.0	554		
960 min Winter	7.132	0.0	704		
1440 min Winter	5.062	0.0	998		
2160 min Winter	3.582	0.0	1408		
2880 min Winter	2.807	0.0	1788		
4320 min Winter	1.998	0.0	2424		
5760 min Winter	1.583	0.0	3000		
7200 min Winter	1.340	0.0	3680		
8640 min Winter	1.179	0.0	4408		
10080 min Winter	1.066	0.0	5144		
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Woods Hardwick		Page 3
15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows SA 06_A	
Date 06/11/2023 File PLOT 6 - SOAKAWAY.SRCX	Designed by ShD Checked by	
Micro Drainage Source Control 2018.1.1		

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 459339 237869 SP 59339 37869
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.029

	Time (mins)	Area
From:	To:	(ha)
	0	4 0.029

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Woods Hardwick		Page 4																		
15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows SA 06_A																			
Date 06/11/2023 File PLOT 6 - SOAKAWAY.SRCX	Designed by ShD Checked by																			
Micro Drainage		Source Control 2018.1.1																		
Model Details Storage is Online Cover Level (m) 81.750 Cellular Storage Structure Invert Level (m) 80.700 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.04700 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.04700 <table><thead><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr></thead><tbody><tr><td>0.000</td><td>52.0</td><td>52.0</td><td>0.500</td><td>0.0</td><td>65.0</td></tr><tr><td>0.400</td><td>52.0</td><td>63.5</td><td></td><td></td><td></td></tr></tbody></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	52.0	52.0	0.500	0.0	65.0	0.400	52.0	63.5			
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)															
0.000	52.0	52.0	0.500	0.0	65.0															
0.400	52.0	63.5																		
©1982-2018 Innovyze																				

Summary of Results for 30 year Return Period (+35%)

Half Drain Time : 335 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	80.469	0.169	0.4	8.3	O K
30 min Summer	80.514	0.214	0.4	10.6	O K
60 min Summer	80.556	0.256	0.4	12.6	O K
120 min Summer	80.584	0.284	0.4	14.0	O K
180 min Summer	80.594	0.294	0.4	14.5	O K
240 min Summer	80.596	0.296	0.4	14.6	O K
360 min Summer	80.591	0.291	0.4	14.4	O K
480 min Summer	80.584	0.284	0.4	14.0	O K
600 min Summer	80.576	0.276	0.4	13.6	O K
720 min Summer	80.568	0.268	0.4	13.2	O K
960 min Summer	80.550	0.250	0.4	12.4	O K
1440 min Summer	80.515	0.215	0.4	10.6	O K
2160 min Summer	80.470	0.170	0.4	8.4	O K
2880 min Summer	80.434	0.134	0.4	6.6	O K
4320 min Summer	80.385	0.085	0.3	4.2	O K
5760 min Summer	80.357	0.057	0.3	2.8	O K
7200 min Summer	80.348	0.048	0.3	2.3	O K
8640 min Summer	80.343	0.043	0.3	2.1	O K
10080 min Summer	80.339	0.039	0.3	1.9	O K
15 min Winter	80.469	0.169	0.4	8.3	O K
30 min Winter	80.514	0.214	0.4	10.6	O K
60 min Winter	80.556	0.256	0.4	12.6	O K
120 min Winter	80.585	0.285	0.4	14.1	O K
180 min Winter	80.595	0.295	0.4	14.6	O K
240 min Winter	80.598	0.298	0.4	14.7	O K
360 min Winter	80.592	0.292	0.4	14.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	118.767	0.0	19
30 min Summer	76.565	0.0	33
60 min Summer	47.170	0.0	62
120 min Summer	27.851	0.0	122
180 min Summer	20.380	0.0	182
240 min Summer	16.295	0.0	240
360 min Summer	11.848	0.0	308
480 min Summer	9.435	0.0	370
600 min Summer	7.897	0.0	434
720 min Summer	6.822	0.0	500
960 min Summer	5.405	0.0	636
1440 min Summer	3.866	0.0	908
2160 min Summer	2.764	0.0	1296
2880 min Summer	2.185	0.0	1672
4320 min Summer	1.582	0.0	2376
5760 min Summer	1.271	0.0	3000
7200 min Summer	1.086	0.0	3680
8640 min Summer	0.963	0.0	4408
10080 min Summer	0.875	0.0	5144
15 min Winter	118.767	0.0	18
30 min Winter	76.565	0.0	33
60 min Winter	47.170	0.0	62
120 min Winter	27.851	0.0	120
180 min Winter	20.380	0.0	176
240 min Winter	16.295	0.0	232
360 min Winter	11.848	0.0	336

Woods Hardwick		Page 2
15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows SA 07_A	
Date 06/11/2023 File PLOT 7 - SOAKAWAY.SRCX	Designed by ShD Checked by	
Micro Drainage		
Source Control 2018.1.1		

Summary of Results for 30 year Return Period (+35%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
480 min Winter	80.582	0.282	0.4	13.9	O K
600 min Winter	80.572	0.272	0.4	13.4	O K
720 min Winter	80.561	0.261	0.4	12.9	O K
960 min Winter	80.536	0.236	0.4	11.7	O K
1440 min Winter	80.488	0.188	0.4	9.3	O K
2160 min Winter	80.427	0.127	0.4	6.3	O K
2880 min Winter	80.382	0.082	0.3	4.1	O K
4320 min Winter	80.346	0.046	0.3	2.3	O K
5760 min Winter	80.337	0.037	0.3	1.8	O K
7200 min Winter	80.332	0.032	0.2	1.6	O K
8640 min Winter	80.329	0.029	0.2	1.4	O K
10080 min Winter	80.326	0.026	0.2	1.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
480 min Winter	9.435	0.0	380
600 min Winter	7.897	0.0	456
720 min Winter	6.822	0.0	532
960 min Winter	5.405	0.0	682
1440 min Winter	3.866	0.0	966
2160 min Winter	2.764	0.0	1344
2880 min Winter	2.185	0.0	1696
4320 min Winter	1.582	0.0	2252
5760 min Winter	1.271	0.0	2992
7200 min Winter	1.086	0.0	3696
8640 min Winter	0.963	0.0	4424
10080 min Winter	0.875	0.0	5240

Woods Hardwick		Page 3
15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows SA 07_A	
Date 06/11/2023 File PLOT 7 - SOAKAWAY.SRCX	Designed by ShD Checked by	
Micro Drainage		
Source Control 2018.1.1		

Rainfall Details

Rainfall Model	FEH	Winter Storms	Yes
Return Period (years)	30	Cv (Summer)	1.000
FEH Rainfall Version	2013	Cv (Winter)	1.000
Site Location	GB 459339 237869 SP 59339 37869	Shortest Storm (mins)	15
Data Type	Point	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+35

Time Area Diagram

Total Area (ha) 0.029

Time (mins)		Area
From:	To:	(ha)
0	4	0.029

Model Details

Storage is Online Cover Level (m) 81.360

Cellular Storage Structure

Invert Level (m) 80.300 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.04600 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.04600

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	52.0	52.0	0.400	52.0	63.5	0.500	0.0	65.0

Woods Hardwick				Page 1																																																																																																																																																																																																																			
15-17 Goldington Road Bedford MK40 3NH		190367 - Oakleigh Meadows SA 07_A																																																																																																																																																																																																																					
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Summary of Results for 100 year Return Period (+40%) Half Drain Time : 456 minutes. <table><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr><tr><td>15 min Summer</td><td>80.528</td><td>0.228</td><td>0.4</td><td>11.3</td><td>O K</td></tr><tr><td>30 min Summer</td><td>80.593</td><td>0.293</td><td>0.4</td><td>14.5</td><td>O K</td></tr><tr><td>60 min Summer</td><td>80.653</td><td>0.353</td><td>0.4</td><td>17.5</td><td>O K</td></tr><tr><td>120 min Summer</td><td>80.693</td><td>0.393</td><td>0.4</td><td>19.4</td><td>O K</td></tr><tr><td>180 min Summer</td><td>80.712</td><td>0.412</td><td>0.4</td><td>20.3</td><td>O K</td></tr><tr><td>240 min Summer</td><td>80.723</td><td>0.423</td><td>0.4</td><td>20.7</td><td>O K</td></tr><tr><td>360 min Summer</td><td>80.722</td><td>0.422</td><td>0.4</td><td>20.6</td><td>O K</td></tr><tr><td>480 min Summer</td><td>80.709</td><td>0.409</td><td>0.4</td><td>20.2</td><td>O K</td></tr><tr><td>600 min Summer</td><td>80.698</td><td>0.398</td><td>0.4</td><td>19.6</td><td>O K</td></tr><tr><td>720 min Summer</td><td>80.687</td><td>0.387</td><td>0.4</td><td>19.1</td><td>O K</td></tr><tr><td>960 min Summer</td><td>80.665</td><td>0.365</td><td>0.4</td><td>18.0</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>80.622</td><td>0.322</td><td>0.4</td><td>15.9</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>80.565</td><td>0.265</td><td>0.4</td><td>13.1</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>80.519</td><td>0.219</td><td>0.4</td><td>10.8</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>80.447</td><td>0.147</td><td>0.4</td><td>7.2</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>80.398</td><td>0.098</td><td>0.4</td><td>4.9</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>80.370</td><td>0.070</td><td>0.3</td><td>3.4</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>80.354</td><td>0.054</td><td>0.3</td><td>2.6</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>80.348</td><td>0.048</td><td>0.3</td><td>2.4</td><td>O K</td></tr><tr><td>15 min Winter</td><td>80.528</td><td>0.228</td><td>0.4</td><td>11.3</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>159.472</td><td>0.0</td><td>19</td></tr><tr><td>30 min Summer</td><td>103.883</td><td>0.0</td><td>33</td></tr><tr><td>60 min Summer</td><td>64.175</td><td>0.0</td><td>64</td></tr><tr><td>120 min Summer</td><td>37.442</td><td>0.0</td><td>122</td></tr><tr><td>180 min Summer</td><td>27.313</td><td>0.0</td><td>182</td></tr><tr><td>240 min Summer</td><td>21.814</td><td>0.0</td><td>242</td></tr><tr><td>360 min Summer</td><td>15.842</td><td>0.0</td><td>360</td></tr><tr><td>480 min Summer</td><td>12.584</td><td>0.0</td><td>412</td></tr><tr><td>600 min Summer</td><td>10.503</td><td>0.0</td><td>474</td></tr><tr><td>720 min Summer</td><td>9.048</td><td>0.0</td><td>534</td></tr><tr><td>960 min Summer</td><td>7.132</td><td>0.0</td><td>664</td></tr><tr><td>1440 min Summer</td><td>5.062</td><td>0.0</td><td>938</td></tr><tr><td>2160 min Summer</td><td>3.582</td><td>0.0</td><td>1340</td></tr><tr><td>2880 min Summer</td><td>2.807</td><td>0.0</td><td>1728</td></tr><tr><td>4320 min Summer</td><td>1.998</td><td>0.0</td><td>2464</td></tr><tr><td>5760 min Summer</td><td>1.583</td><td>0.0</td><td>3120</td></tr><tr><td>7200 min Summer</td><td>1.340</td><td>0.0</td><td>3816</td></tr><tr><td>8640 min Summer</td><td>1.179</td><td>0.0</td><td>4416</td></tr><tr><td>10080 min Summer</td><td>1.066</td><td>0.0</td><td>5144</td></tr><tr><td>15 min Winter</td><td>159.472</td><td>0.0</td><td>19</td></tr></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	80.528	0.228	0.4	11.3	O K	30 min Summer	80.593	0.293	0.4	14.5	O K	60 min Summer	80.653	0.353	0.4	17.5	O K	120 min Summer	80.693	0.393	0.4	19.4	O K	180 min Summer	80.712	0.412	0.4	20.3	O K	240 min Summer	80.723	0.423	0.4	20.7	O K	360 min Summer	80.722	0.422	0.4	20.6	O K	480 min Summer	80.709	0.409	0.4	20.2	O K	600 min Summer	80.698	0.398	0.4	19.6	O K	720 min Summer	80.687	0.387	0.4	19.1	O K	960 min Summer	80.665	0.365	0.4	18.0	O K	1440 min Summer	80.622	0.322	0.4	15.9	O K	2160 min Summer	80.565	0.265	0.4	13.1	O K	2880 min Summer	80.519	0.219	0.4	10.8	O K	4320 min Summer	80.447	0.147	0.4	7.2	O K	5760 min Summer	80.398	0.098	0.4	4.9	O K	7200 min Summer	80.370	0.070	0.3	3.4	O K	8640 min Summer	80.354	0.054	0.3	2.6	O K	10080 min Summer	80.348	0.048	0.3	2.4	O K	15 min Winter	80.528	0.228	0.4	11.3	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	159.472	0.0	19	30 min Summer	103.883	0.0	33	60 min Summer	64.175	0.0	64	120 min Summer	37.442	0.0	122	180 min Summer	27.313	0.0	182	240 min Summer	21.814	0.0	242	360 min Summer	15.842	0.0	360	480 min Summer	12.584	0.0	412	600 min Summer	10.503	0.0	474	720 min Summer	9.048	0.0	534	960 min Summer	7.132	0.0	664	1440 min Summer	5.062	0.0	938	2160 min Summer	3.582	0.0	1340	2880 min Summer	2.807	0.0	1728	4320 min Summer	1.998	0.0	2464	5760 min Summer	1.583	0.0	3120	7200 min Summer	1.340	0.0	3816	8640 min Summer	1.179	0.0	4416	10080 min Summer	1.066	0.0	5144	15 min Winter	159.472	0.0	19
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10080 min Summer	1.066	0.0	5144																																																																																																																																																																																																																				
15 min Winter	159.472	0.0	19																																																																																																																																																																																																																				
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Date 06/11/2023 File PLOT 7 - SOAKAWAY.SRCX	Designed by ShD Checked by				
Micro Drainage Source Control 2018.1.1					
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	80.594	0.294	0.4	14.5	O K
60 min Winter	80.654	0.354	0.4	17.5	O K
120 min Winter	80.694	0.394	0.4	19.5	O K
180 min Winter	80.714	0.414	0.4	20.4	O K
240 min Winter	80.727	0.427	0.4	20.8	O K
360 min Winter	80.728	0.428	0.4	20.8	O K
480 min Winter	80.712	0.412	0.4	20.3	O K
600 min Winter	80.697	0.397	0.4	19.6	O K
720 min Winter	80.685	0.385	0.4	19.0	O K
960 min Winter	80.657	0.357	0.4	17.6	O K
1440 min Winter	80.599	0.299	0.4	14.8	O K
2160 min Winter	80.522	0.222	0.4	11.0	O K
2880 min Winter	80.460	0.160	0.4	7.9	O K
4320 min Winter	80.374	0.074	0.3	3.7	O K
5760 min Winter	80.346	0.046	0.3	2.3	O K
7200 min Winter	80.340	0.040	0.3	2.0	O K
8640 min Winter	80.335	0.035	0.2	1.7	O K
10080 min Winter	80.332	0.032	0.2	1.6	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	103.883	0.0	33		
60 min Winter	64.175	0.0	62		
120 min Winter	37.442	0.0	120		
180 min Winter	27.313	0.0	178		
240 min Winter	21.814	0.0	234		
360 min Winter	15.842	0.0	346		
480 min Winter	12.584	0.0	448		
600 min Winter	10.503	0.0	482		
720 min Winter	9.048	0.0	556		
960 min Winter	7.132	0.0	710		
1440 min Winter	5.062	0.0	1008		
2160 min Winter	3.582	0.0	1408		
2880 min Winter	2.807	0.0	1792		
4320 min Winter	1.998	0.0	2460		
5760 min Winter	1.583	0.0	3000		
7200 min Winter	1.340	0.0	3744		
8640 min Winter	1.179	0.0	4416		
10080 min Winter	1.066	0.0	5136		
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Date 06/11/2023 File PLOT 7 - SOAKAWAY.SRCX	Designed by ShD Checked by	
Micro Drainage Source Control 2018.1.1		

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 459339 237869 SP 59339 37869
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.029

	Time (mins)	Area
From:	To:	(ha)
	0	4 0.029

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15-17 Goldington Road Bedford MK40 3NH	190367 - Oakleigh Meadows SA 07_A																			
Date 06/11/2023 File PLOT 7 - SOAKAWAY.SRCX	Designed by ShD Checked by																			
Micro Drainage		Source Control 2018.1.1																		
Model Details Storage is Online Cover Level (m) 81.360 Cellular Storage Structure Invert Level (m) 80.300 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.04600 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.04600 <table><thead><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr></thead><tbody><tr><td>0.000</td><td>52.0</td><td>52.0</td><td>0.500</td><td>0.0</td><td>65.0</td></tr><tr><td>0.400</td><td>52.0</td><td>63.5</td><td></td><td></td><td></td></tr></tbody></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	52.0	52.0	0.500	0.0	65.0	0.400	52.0	63.5			
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)															
0.000	52.0	52.0	0.500	0.0	65.0															
0.400	52.0	63.5																		
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Appendix M

Exceedance Flow Plan



- NOTES
- Contractors must check all dimensions on site. Only figured dimensions are to be worked from. Discrepancies must be reported to the Architect or Engineer before proceeding. © This drawing is copyright.
 - All plans and drawings are drawn true to stated scales and can be used for the purpose of planning only. Responsibility is not accepted for errors made by others in scaling from this drawing.
 - Reproduced from OS Sitemap © by permission of Ordnance Survey on behalf of The Controller of His Majesty's Stationery Office. © Crown copyright 2008. All rights reserved. Licence number 100007126.
 - Until technical approval has been obtained from the relevant authorities, all drawings are issued as preliminary and not for construction. Should the Contractor commence site work prior to approval being given it is entirely at their own risk.
 - The designer, developer and contractor shall comply with all current requirements in relation to health, safety and welfare.
 - Exact location and level of all existing sewers, drains and services to be checked on site before commencing works.
 - All sewers must be laid from outfall working upstream. Precise depth of outfalls to be checked prior to proceeding with any other works.
 - No surface water shall drain from private land or un-adoptable highway onto adopted highway or vice versa.

Building Drainage Notes

- All drainage to comply with Section H of the Building Regulations 2010 & BS.8301:1985.
- All drains to be 100mm diameter unless otherwise shown. Drains to be flexibly jointed 'supersleve' by Wavin or similar approved, with granular bed & surround where necessary. Drains under buildings to be backfilled to underside of slab with granular material. Drains passing through walls to have lintels over. All manholes to be on one side or other of boundaries. Manholes to be preformed shallow access chambers, GRP inspection chambers or rectangular section P.C. concrete segments of the appropriate size for depth in accordance with BS.8301:1985 i.e. n.e. 1.0m deep to be 450x450 (internal), 1.0-2.7m deep to be 750x1200mm (internal) or as otherwise agreed. All manholes over 900mm deep to have step irons. Foundations to be taken down to invert level of drains where drains are less than 1.0m away from building.
- The contractor is to check the relationship between as-built centreline of road & back of footpath to verify levels opposite principal mobility access to ensure compliance with Part 'M' of the building regulations. Any discrepancy with design information to be confirmed with Woods Hardwick Ltd. and the Developer before setting finished floor levels of affected properties.

General notes:

- All stubs and invert levels to be verified prior to connection of private surface & foul drainage.
- Existing topo survey is based on the original ground levels and makes no allowance for ground raising.
- All materials subject to " & " approval.
- All flights of steps to primary level access, with more than 2 steps are to be provided with handrailing, except where the steps are 900mm or more apart.

SAFETY, HEALTH AND ENVIRONMENTAL

In addition to the hazards, risks normally associated with the type of work detailed on this drawing, note the following significant risks and information.

Construction:

- There is a moderate risk of asbestos being present on site. An asbestos survey should be undertaken with all identified asbesto to be disposed safely to a licenced tip.
- Works are in or adjacent to live highways and construction traffic.
- The Contractor should make all necessary enquiries and take all necessary measures to identify the location of existing utilities and take relevant precautions.

For information relating to end use, maintenance, demolition, see the health and safety file.

It is assumed that all works will be carried out by a competent Contractor, where appropriate, to an approved method statement.

← Direction of flood routing (100yr + 40%CC)

A	Updated to revised layout		ShD	SD	23.04.24
REV	DESCRIPTION		DRN	CHD	DATE
☒	PRELIMINARY	☐	INFORMATION	☐	TENDER
☐	CONSTRUCTION	☐	AS BUILT		

SCALE	1:500 @ A2	DATE	JULY 2024
DRAWN	ShD	CHK	SD
DRAWING NO.	193667-OAKL-5-206	REV	A

TITLE	OAKLEIGH MEADOWS WELWYN
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DETAILS	EXCEEDANCE FLOW PLAN
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PLEASE CONSIDER THE ENVIRONMENT BEFORE PRINTING THIS DRAWING

