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Tuscany House White Hart Lane Basingstoke RG21 4AF	Stakers Farm, Yapton 70 Units Permeable Paving_revC	
Date 30/04/2021 13:07 File 19-156 70 Units Perm Paving Strategy.MDX	Designed by AK Checked by	
Micro Drainage	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for 70 Units Perm Paving RevC

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model			
Return Period (years)	10	Volumetric Runoff Coeff.	0.750
		PIMP (%)	100
FEH Rainfall Version	2013	Add Flow / Climate Change (%)	0
Site Location	GB 497682 103581 SU 97682 03581	Minimum Backdrop Height (m)	0.200
Data Type	Point	Maximum Backdrop Height (m)	1.500
Maximum Rainfall (mm/hr)	50	Min Design Depth for Optimisation (m)	0.100
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	0.50
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for 70 Units Perm Paving RevC at outfall (pipe S1.004)

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.167	4-8	0.092

Total Area Contributing (ha) = 0.259

Total Pipe Volume (m³) = 8.852

Time Area Diagram at outfall (pipe S2.001)

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.025	4-8	0.001

Total Area Contributing (ha) = 0.026

Total Pipe Volume (m³) = 3.101

Time Area Diagram at outfall (pipe S3.001)

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.046	4-8	0.002

Total Area Contributing (ha) = 0.048

Total Pipe Volume (m³) = 4.402

Time Area Diagram at outfall 16 (pipe S4.004)

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.026	4-8	0.025	8-12	0.057	12-16	0.046	16-20	0.009

Total Area Contributing (ha) = 0.163

Total Pipe Volume (m³) = 11.725

Time Area Diagram at outfall 12 (pipe S6.002)

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.051	4-8	0.003

Total Area Contributing (ha) = 0.055

Total Pipe Volume (m³) = 3.640

Time Area Diagram at outfall (pipe S7.001)

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.026	4-8	0.001

Total Area Contributing (ha) = 0.028

Total Pipe Volume (m³) = 3.507

Time Area Diagram at outfall 16 (pipe S8.001)

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.007	4-8	0.000

Total Area Contributing (ha) = 0.007

Total Pipe Volume (m³) = 0.903

Network Design Table for 70 Units Perm Paving RevC

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	17.152	0.125	137.2	0.145	5.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	5.21	6.440	0.145	0.0	0.0	0.0	1.34	94.7	19.7

Network Design Table for 70 Units Perm Paving RevC

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.001	23.234	0.200	116.2	0.036	0.00	0.0	0.600	o	300	Pipe/Conduit	🟢
S1.002	34.838	0.500	69.7	0.020	0.00	0.0	0.600	o	300	Pipe/Conduit	🟢
S1.003	44.469	0.425	104.6	0.027	0.00	0.0	0.600	o	300	Pipe/Conduit	🟢
S1.004	5.544	0.007	791.9	0.030	0.00	0.0	0.600	o	300	Pipe/Conduit	🟢
S2.000	39.629	0.075	528.4	0.000	5.00	0.0	0.600	o	300	Pipe/Conduit	🟢
S2.001	4.246	0.005	849.2	0.026	0.00	0.0	0.600	o	300	Pipe/Conduit	🟢
S3.000	53.477	0.540	99.0	0.000	5.00	0.0	0.600	o	300	Pipe/Conduit	🔒
S3.001	8.795	0.029	300.0	0.048	0.00	0.0	0.600	o	300	Pipe/Conduit	🔒
S4.000	25.181	0.115	219.0	0.000	5.00	0.0	0.600	o	300	Pipe/Conduit	🟢
S4.001	15.649	0.000	0.0	0.020	0.00	0.0	0.600	o	300	Pipe/Conduit	🔒
S5.000	16.257	0.000	0.0	0.000	5.00	0.0	0.600	o	300	Pipe/Conduit	🔒

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.001	50.00	5.48	6.315	0.181	0.0	0.0	0.0	1.46	103.0	24.5
S1.002	50.00	5.79	6.115	0.201	0.0	0.0	0.0	1.89	133.3	27.3
S1.003	50.00	6.27	5.615	0.229	0.0	0.0	0.0	1.54	108.6	31.0
S1.004	50.00	6.44	5.190	0.259	0.0	0.0	0.0	0.55	38.9	35.1
S2.000	50.00	5.98	5.175	0.000	0.0	0.0	0.0	0.68	47.9	0.0
S2.001	50.00	6.11	5.100	0.026	0.0	0.0	0.0	0.53	37.6	3.5
S3.000	50.00	5.56	5.940	0.000	0.0	0.0	0.0	1.58	111.7	0.0
S3.001	50.00	5.73	5.400	0.048	0.0	0.0	0.0	0.90	63.8	6.5
S4.000	50.00	5.40	6.415	0.000	0.0	0.0	0.0	1.06	74.8	0.0
S4.001	50.00	7.15	6.300	0.020	0.0	0.0	0.0	0.15	10.5	2.7
S5.000	50.00	6.82	6.350	0.000	0.0	0.0	0.0	0.15	10.5	0.0

Network Design Table for 70 Units Perm Paving RevC

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S5.001	35.633	0.000	0.0	0.018	0.00	0.0	0.600	o	300	Pipe/Conduit	
S5.002	51.624	0.037	1400.0	0.074	0.00	0.0	0.600	o	150	Pipe/Conduit	
S5.003	18.239	0.013	1403.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S4.002	16.420	0.000	0.0	0.012	0.00	0.0	0.600	o	300	Pipe/Conduit	
S4.003	32.668	0.000	0.0	0.014	0.00	0.0	0.600	o	300	Pipe/Conduit	
S4.004	6.598	0.150	44.0	0.026	0.00	0.0	0.600	o	300	Pipe/Conduit	
S6.000	20.228	0.200	101.1	0.000	5.00	0.0	0.600	o	300	Pipe/Conduit	
S6.001	22.076	0.230	96.0	0.032	0.00	0.0	0.600	o	300	Pipe/Conduit	
S6.002	9.198	0.100	92.0	0.022	0.00	0.0	0.600	o	300	Pipe/Conduit	
S7.000	44.135	0.130	339.5	0.000	5.00	0.0	0.600	o	300	Pipe/Conduit	
S7.001	5.483	0.005	1096.6	0.028	0.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S5.001	50.00	10.81	6.350	0.018	0.0	0.0	0.0	0.15	10.5	2.4
S5.002	50.00	14.11	6.350	0.092	0.0	0.0	0.0	0.26	4.6<	12.4
S5.003	50.00	15.28	6.313	0.092	0.0	0.0	0.0	0.26	4.6<	12.4
S4.002	50.00	17.12	6.300	0.123	0.0	0.0	0.0	0.15	10.5<	16.7
S4.003	50.00	20.77	6.300	0.138	0.0	0.0	0.0	0.15	10.5<	18.7
S4.004	50.00	20.82	6.300	0.163	0.0	0.0	0.0	2.38	168.0	22.1
S6.000	50.00	5.22	6.430	0.000	0.0	0.0	0.0	1.56	110.5	0.0
S6.001	50.00	5.44	6.230	0.032	0.0	0.0	0.0	1.61	113.5	4.4
S6.002	50.00	5.54	6.000	0.055	0.0	0.0	0.0	1.64	115.9	7.4
S7.000	50.00	5.87	5.320	0.000	0.0	0.0	0.0	0.85	59.9	0.0
S7.001	50.00	6.06	5.190	0.028	0.0	0.0	0.0	0.47	33.0	3.8

Network Design Table for 70 Units Perm Paving RevC

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S8.000	7.809	0.390	20.0	0.000	5.00	0.0	0.600	o	300	Pipe/Conduit	
S8.001	4.968	0.015	331.2	0.007	0.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S8.000	50.00	5.04	6.300	0.000	0.0	0.0	0.0	3.53	249.5	0.0
S8.001	50.00	5.13	5.910	0.007	0.0	0.0	0.0	0.86	60.7	1.0

Free Flowing Outfall Details for 70 Units Perm Paving RevC

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.004		6.025	5.183	0.000	0	0

Free Flowing Outfall Details for 70 Units Perm Paving RevC

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S2.001		5.910	5.095	0.000	0	0

Free Flowing Outfall Details for 70 Units Perm Paving RevC

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S3.001		6.210	5.371	0.000	0	0

Free Flowing Outfall Details for 70 Units Perm Paving RevC

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S4.004	16	7.110	6.150	0.000	1200	0

Free Flowing Outfall Details for 70 Units Perm Paving RevC

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S6.002	12	6.810	5.900	0.000	1200	0

Free Flowing Outfall Details for 70 Units Perm Paving RevC

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S7.001		6.025	5.185	0.000	0	0

Free Flowing Outfall Details for 70 Units Perm Paving RevC

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S8.001	16	6.620	5.895	0.000	1200	0

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Online Controls for 70 Units Perm Paving RevC

Weir Manhole: 2, DS/PN: S1.001, Volume (m³): 1.4

Discharge Coef 0.544 Width (m) 0.600 Invert Level (m) 6.895

Weir Manhole: 3, DS/PN: S1.002, Volume (m³): 1.8

Discharge Coef 0.544 Width (m) 0.600 Invert Level (m) 6.695

Weir Manhole: 4, DS/PN: S1.003, Volume (m³): 2.6

Discharge Coef 0.544 Width (m) 0.600 Invert Level (m) 6.195

Pump Manhole: 5, DS/PN: S1.004, Volume (m³): 3.3

Invert Level (m) 5.190

Pump Manhole: 7, DS/PN: S2.001, Volume (m³): 3.0

Invert Level (m) 5.100

Pump Manhole: 9, DS/PN: S3.001, Volume (m³): 4.0

Invert Level (m) 5.400

Orifice Manhole: 14, DS/PN: S5.002, Volume (m³): 2.7

Diameter (m) 0.100 Discharge Coefficient 0.600 Invert Level (m) 6.350

Pump Manhole: 18, DS/PN: S4.004, Volume (m³): 2.5

Invert Level (m) 6.300

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Weir Manhole: 20, DS/PN: S6.001, Volume (m³): 1.6

Discharge Coef 0.544 Width (m) 0.600 Invert Level (m) 6.810

Pump Manhole: 21, DS/PN: S6.002, Volume (m³): 1.7

Invert Level (m) 6.000

Pump Manhole: 23, DS/PN: S7.001, Volume (m³): 3.3

Invert Level (m) 5.190

Pump Manhole: 25, DS/PN: S8.001, Volume (m³): 0.7

Invert Level (m) 5.910

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Storage Structures for 70 Units Perm Paving RevC

Porous Car Park Manhole: 1, DS/PN: S1.000

Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	0.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	6.440	Depression Storage (mm)	5
Max Percolation (l/s)	220.9	Width (m)	28.2	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	28.2	Cap Volume Depth (m)	0.600

Porous Car Park Manhole: 2, DS/PN: S1.001

Infiltration Coefficient Base (m/hr)	0.00540	Porosity	0.30	Slope (1:X)	137.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	6.315	Depression Storage (mm)	5
Max Percolation (l/s)	53.2	Width (m)	6.7	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	28.6	Cap Volume Depth (m)	0.600

Porous Car Park Manhole: 3, DS/PN: S1.002

Infiltration Coefficient Base (m/hr)	0.00540	Porosity	0.30	Slope (1:X)	116.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	6.115	Depression Storage (mm)	5
Max Percolation (l/s)	30.7	Width (m)	4.8	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	23.0	Cap Volume Depth (m)	0.600

Porous Car Park Manhole: 4, DS/PN: S1.003

Infiltration Coefficient Base (m/hr)	0.00648	Porosity	0.30	Slope (1:X)	70.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	5.615	Depression Storage (mm)	5
Max Percolation (l/s)	46.7	Width (m)	4.8	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	35.0	Cap Volume Depth (m)	0.600

Porous Car Park Manhole: 5, DS/PN: S1.004

Infiltration Coefficient Base (m/hr)	0.00648	Porosity	0.30	Slope (1:X)	105.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	5.190	Depression Storage (mm)	5
Max Percolation (l/s)	60.8	Width (m)	4.8	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	45.6	Cap Volume Depth (m)	0.600

Porous Car Park Manhole: 7, DS/PN: S2.001

Infiltration Coefficient Base (m/hr)	0.00630	Porosity	0.30	Slope (1:X)	528.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	5.100	Depression Storage (mm)	5
Max Percolation (l/s)	71.1	Width (m)	6.4	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	40.0	Cap Volume Depth (m)	0.600

Porous Car Park Manhole: 9, DS/PN: S3.001

Infiltration Coefficient Base (m/hr)	0.00612	Porosity	0.30	Slope (1:X)	99.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	5.400	Depression Storage (mm)	5
Max Percolation (l/s)	122.2	Width (m)	8.0	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	55.0	Cap Volume Depth (m)	0.600

Porous Car Park Manhole: 11, DS/PN: S4.001

Infiltration Coefficient Base (m/hr)	0.00540	Porosity	0.30	Slope (1:X)	219.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	6.300	Depression Storage (mm)	5
Max Percolation (l/s)	33.6	Width (m)	4.8	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	25.2	Cap Volume Depth (m)	0.600

Porous Car Park Manhole: 13, DS/PN: S5.001

Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	0.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	6.350	Depression Storage (mm)	5
Max Percolation (l/s)	41.0	Width (m)	5.9	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	25.0	Cap Volume Depth (m)	0.600

Porous Car Park Manhole: 14, DS/PN: S5.002

Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	0.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	6.350	Depression Storage (mm)	5
Max Percolation (l/s)	205.5	Width (m)	27.2	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	27.2	Cap Volume Depth (m)	0.600

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Porous Car Park Manhole: 16, DS/PN: S4.002

Infiltration Coefficient Base (m/hr)	0.00540	Porosity	0.30	Slope (1:X)	0.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	6.300	Depression Storage (mm)	5
Max Percolation (l/s)	25.2	Width (m)	4.8	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	18.9	Cap Volume Depth (m)	0.600

Porous Car Park Manhole: 17, DS/PN: S4.003

Infiltration Coefficient Base (m/hr)	0.00540	Porosity	0.30	Slope (1:X)	0.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	6.300	Depression Storage (mm)	5
Max Percolation (l/s)	23.8	Width (m)	5.6	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	15.3	Cap Volume Depth (m)	0.600

Porous Car Park Manhole: 18, DS/PN: S4.004

Infiltration Coefficient Base (m/hr)	0.00540	Porosity	0.30	Slope (1:X)	0.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	6.300	Depression Storage (mm)	5
Max Percolation (l/s)	51.3	Width (m)	5.6	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	33.0	Cap Volume Depth (m)	0.600

Porous Car Park Manhole: 20, DS/PN: S6.001

Infiltration Coefficient Base (m/hr)	0.00576	Porosity	0.30	Slope (1:X)	101.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	6.230	Depression Storage (mm)	5
Max Percolation (l/s)	33.0	Width (m)	5.4	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	22.0	Cap Volume Depth (m)	0.600

Porous Car Park Manhole: 21, DS/PN: S6.002

Infiltration Coefficient Base (m/hr)	0.00576	Porosity	0.30	Slope (1:X)	96.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	6.000	Depression Storage (mm)	5
Max Percolation (l/s)	60.7	Width (m)	10.4	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	21.0	Cap Volume Depth (m)	0.600

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Porous Car Park Manhole: 23, DS/PN: S7.001

Infiltration Coefficient Base (m/hr)	0.00648	Porosity	0.30	Slope (1:X)	339.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	5.190	Depression Storage (mm)	5
Max Percolation (l/s)	59.1	Width (m)	4.8	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	44.3	Cap Volume Depth (m)	0.600

Porous Car Park Manhole: 25, DS/PN: S8.001

Infiltration Coefficient Base (m/hr)	0.00540	Porosity	0.30	Slope (1:X)	20.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	5.910	Depression Storage (mm)	5
Max Percolation (l/s)	10.6	Width (m)	4.9	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	7.8	Cap Volume Depth (m)	0.600

Odyssey		Page 1
Tuscany House White Hart Lane Basingstoke RG21 4AF	Stakers Farm, Yapton 70 Units Permeable Paving_revC	
Date 30/04/2021 13:11 File 19-156 70 Units Perm Paving Strategy.MDX	Designed by AK Checked by	
Micro Drainage	Network 2020.1.3	

Summary Wizard of 1440 minute 10 year Summer I+40% for 70 Units_Perm Paving_RevC

Simulation Criteria

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

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 12 Number of Storage Structures 17 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Site Location GB 497682 103581 SU 97682 03581 Cv (Summer) 0.750
FEH Rainfall Version 2013 Data Type Point Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 150.0 DVD Status ON
Analysis Timestep 2.5 Second Increment (Extended) Inertia Status ON
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 10, 100
Climate Change (%) 40, 40

			Water Surcharged Flooded				Maximum Half Drain Pipe					
PN	US/MH Name	Event	US/CL (m)	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Maximum Vol (m³)	Velocity (m/s)	Time (mins)	Flow (l/s)	Status
S1.000	1	1440 minute 10 year Summer I+40%	7.250	6.737	-0.003	0.000	0.00	71.018	0.1		0.3	OK
S1.001	2	1440 minute 10 year Summer I+40%	7.125	6.737	0.122	0.000	0.00	19.560	0.0		0.0	SURCHARGED
S1.002	3	1440 minute 10 year Summer I+40%	6.925	6.395	-0.020	0.000	0.00	7.005	0.0	1000	0.0	OK
S1.003	4	1440 minute 10 year Summer I+40%	6.425	6.019	0.104	0.000	0.00	9.565	0.0	1073	0.0	SURCHARGED
S1.004	5	1440 minute 10 year Summer I+40%	6.000	5.528	0.038	0.000	0.00	10.091	0.0	942	0.0	SURCHARGED
S2.000	6	1440 minute 10 year Summer I+40%	5.985	5.209	-0.266	0.000	0.00	0.008	0.0		0.0	OK
S2.001	7	1440 minute 10 year Summer I+40%	5.910	5.209	-0.191	0.000	0.00	5.945	0.0	418	0.0	OK
S3.000	8	1440 minute 10 year Summer I+40%	6.750	5.940	-0.300	0.000	0.00	0.000	0.0		0.0	OK
S3.001	9	1440 minute 10 year Summer I+40%	6.210	5.750	0.050	0.000	0.00	15.984	0.0	960	0.0	SURCHARGED
S4.000	10	1440 minute 10 year Summer I+40%	7.225	6.486	-0.229	0.000	0.00	0.019	0.0		0.0	OK
S4.001	11	1440 minute 10 year Summer I+40%	7.110	6.486	-0.114	0.000	0.01	5.389	0.0	880	0.2	OK

Summary Wizard of 1440 minute 10 year Summer I+40% for 70 Units_Perm Paving_RevC

			Water		Surcharged	Flooded			Maximum	Half Drain	Pipe	Status
PN	US/MH Name	Event	US/CL (m)	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Maximum Vol (m³)	Velocity (m/s)	Time (mins)	Flow (l/s)	
S5.000	12	1440 minute 10 year Summer I+40%	7.250	6.500	-0.150	0.000	0.00	0.041	0.0		0.0	OK
S5.001	13	1440 minute 10 year Summer I+40%	7.160	6.500	-0.150	0.000	0.01	7.078	0.0		0.3	OK
S5.002	14	1440 minute 10 year Summer I+40%	7.160	6.500	0.000	0.000	0.26	34.229	0.1		1.4	OK
S5.003	15	1440 minute 10 year Summer I+40%	7.135	6.487	0.024	0.000	0.32	0.962	0.1		1.4	SURCHARGED
S4.002	16	1440 minute 10 year Summer I+40%	7.110	6.486	-0.114	0.000	0.04	5.928	0.0	1135	0.8	OK
S4.003	17	1440 minute 10 year Summer I+40%	7.120	6.486	-0.114	0.000	0.02	5.391	0.0	1127	0.5	OK
S4.004	18	1440 minute 10 year Summer I+40%	7.125	6.486	-0.114	0.000	0.00	11.499	0.0	1127	0.0	OK
S6.000	19	1440 minute 10 year Summer I+40%	7.240	6.644	-0.086	0.000	0.00	0.059	0.0		0.0	OK
S6.001	20	1440 minute 10 year Summer I+40%	7.040	6.644	0.114	0.000	0.00	12.295	0.0	1330	0.0	SURCHARGED
S6.002	21	1440 minute 10 year Summer I+40%	6.810	6.197	-0.103	0.000	0.00	6.269	0.0	659	0.0	OK
S7.000	22	1440 minute 10 year Summer I+40%	6.130	5.359	-0.261	0.000	0.00	0.009	0.0		0.0	OK
S7.001	23	1440 minute 10 year Summer I+40%	6.000	5.358	-0.132	0.000	0.00	7.577	0.0	594	0.0	OK
S8.000	24	1440 minute 10 year Summer I+40%	7.110	6.300	-0.300	0.000	0.00	0.000	0.0		0.0	OK
S8.001	25	1440 minute 10 year Summer I+40%	6.720	6.297	0.087	0.000	0.00	2.596	0.0	1205	0.0	SURCHARGED

Odyssey		Page 3
Tuscany House White Hart Lane Basingstoke RG21 4AF	Stakers Farm, Yapton 70 Units Permeable Paving_revC	
Date 30/04/2021 13:11 File 19-156 70 Units Perm Paving Strategy.MDX	Designed by AK Checked by	
Micro Drainage	Network 2020.1.3	

Summary Wizard of 1440 minute 10 year Winter I+40% for 70 Units_Perm Paving_RevC

Simulation Criteria

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

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 12 Number of Storage Structures 17 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Site Location GB 497682 103581 SU 97682 03581 Cv (Summer) 0.750
FEH Rainfall Version 2013 Data Type Point Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 150.0 DVD Status ON
Analysis Timestep 2.5 Second Increment (Extended) Inertia Status ON
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 10, 100
Climate Change (%) 40, 40

PN	US/MH Name	Event	US/CL (m)	Water Surcharged Flooded				Flow / Cap.	Maximum Vol (m³)	Maximum Velocity (m/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
				Level (m)	Depth (m)	Volume (m³)	Flow						
S1.000	1	1440 minute 10 year Winter I+40%	7.250	6.779	0.039	0.000	0.00	80.983	0.2			0.3	SURCHARGED
S1.001	2	1440 minute 10 year Winter I+40%	7.125	6.779	0.164	0.000	0.00	21.977	0.0			0.0	SURCHARGED
S1.002	3	1440 minute 10 year Winter I+40%	6.925	6.420	0.005	0.000	0.00	8.025	0.0	1052		0.0	SURCHARGED
S1.003	4	1440 minute 10 year Winter I+40%	6.425	6.046	0.131	0.000	0.00	10.836	0.0	1071		0.0	SURCHARGED
S1.004	5	1440 minute 10 year Winter I+40%	6.000	5.550	0.060	0.000	0.00	11.368	0.0	935		0.0	SURCHARGED
S2.000	6	1440 minute 10 year Winter I+40%	5.985	5.212	-0.263	0.000	0.00	0.009	0.0			0.0	OK
S2.001	7	1440 minute 10 year Winter I+40%	5.910	5.212	-0.188	0.000	0.00	6.228	0.0	450		0.0	OK
S3.000	8	1440 minute 10 year Winter I+40%	6.750	5.940	-0.300	0.000	0.00	0.000	0.0			0.0	OK
S3.001	9	1440 minute 10 year Winter I+40%	6.210	5.772	0.072	0.000	0.00	18.058	0.0	953		0.0	SURCHARGED
S4.000	10	1440 minute 10 year Winter I+40%	7.225	6.509	-0.206	0.000	0.00	0.025	0.0			0.0	OK
S4.001	11	1440 minute 10 year Winter I+40%	7.110	6.510	-0.090	0.000	0.01	6.417	0.0	1281		0.2	OK

Summary Wizard of 1440 minute 10 year Winter I+40% for 70 Units_Perm Paving_RevC

										Water	Surcharged	Flooded			Maximum	Half Drain	Pipe	Status
US/MH							US/CL	Level	Depth	Volume	Flow /	Maximum	Velocity	Time	Flow			
PN	Name	Event					(m)	(m)	(m)	(m³)	Cap.	Vol (m³)	(m/s)	(mins)	(l/s)			
S5.000	12	1440	minute	10	year	Winter	I+40%	7.250	6.515	-0.135	0.000	0.00	0.045	0.0			0.0	OK
S5.001	13	1440	minute	10	year	Winter	I+40%	7.160	6.515	-0.135	0.000	0.01	7.799	0.0			0.3	OK
S5.002	14	1440	minute	10	year	Winter	I+40%	7.160	6.515	0.015	0.000	0.21	37.644	0.1			1.1	SURCHARGED
S5.003	15	1440	minute	10	year	Winter	I+40%	7.135	6.510	0.047	0.000	0.26	1.084	0.1			1.1	SURCHARGED
S4.002	16	1440	minute	10	year	Winter	I+40%	7.110	6.510	-0.090	0.000	0.03	6.709	0.0			0.7	OK
S4.003	17	1440	minute	10	year	Winter	I+40%	7.120	6.510	-0.090	0.000	0.02	6.118	0.0			0.5	OK
S4.004	18	1440	minute	10	year	Winter	I+40%	7.125	6.510	-0.090	0.000	0.00	13.041	0.0			0.0	OK
S6.000	19	1440	minute	10	year	Winter	I+40%	7.240	6.698	-0.032	0.000	0.00	0.074	0.0			0.0	OK
S6.001	20	1440	minute	10	year	Winter	I+40%	7.040	6.698	0.168	0.000	0.00	14.279	0.0		1346	0.0	SURCHARGED
S6.002	21	1440	minute	10	year	Winter	I+40%	6.810	6.207	-0.093	0.000	0.00	6.865	0.0		644	0.0	OK
S7.000	22	1440	minute	10	year	Winter	I+40%	6.130	5.369	-0.251	0.000	0.00	0.012	0.0			0.0	OK
S7.001	23	1440	minute	10	year	Winter	I+40%	6.000	5.369	-0.121	0.000	0.00	8.340	0.0		595	0.0	OK
S8.000	24	1440	minute	10	year	Winter	I+40%	7.110	6.324	-0.276	0.000	0.00	0.021	0.0			0.0	OK
S8.001	25	1440	minute	10	year	Winter	I+40%	6.720	6.324	0.114	0.000	0.00	2.945	0.0		1222	0.0	SURCHARGED

10 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 70 Units Perm Paving RevC

Simulation Criteria

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

Number of Input Hydrographs 0	Number of Offline Controls 0	Number of Time/Area Diagrams 0
Number of Online Controls 12	Number of Storage Structures 17	Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH	Site Location GB 497682 103581 SU 97682 03581	Cv (Summer) 0.750
FEH Rainfall Version 2013	Data Type	Point Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	150.0	DVD Status ON
Analysis Timestep 2.5 Second Increment (Extended)	Inertia Status ON	
DTS Status	ON	

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	10, 100
Climate Change (%)	40, 40

WARNING: Half Drain Time has not been calculated as the structure is too full.

										Water	Surcharged	Flooded	Maximum		Half Drain	Pipe		
	US/MH							US/CL	Level	Depth	Volume	Flow /	Maximum	Velocity	Time	Flow		
PN	Name	Event					(m)	(m)	(m)	(m³)	Cap.	Vol (m³)	(m/s)	(mins)	(l/s)	Status		
S1.000	1	10080 minute	10 year	Winter	I+40%	7.250	6.903	0.163	0.000	0.00	110.616	0.1	10040	0.3	SURCHARGED			
S1.001	2	10080 minute	10 year	Winter	I+40%	7.125	6.903	0.288	0.000	0.00	29.143	0.0	10688	0.1	SURCHARGED			
S1.002	3	600 minute	10 year	Winter	I+40%	6.925	6.435	0.020	0.000	0.00	8.555	0.0		0.0	SURCHARGED			
S1.003	4	600 minute	10 year	Winter	I+40%	6.425	6.056	0.141	0.000	0.00	11.333	0.0		0.0	SURCHARGED			
S1.004	5	600 minute	10 year	Winter	I+40%	6.000	5.561	0.071	0.000	0.00	12.079	0.0		0.0	SURCHARGED			
S2.000	6	360 minute	10 year	Winter	I+40%	5.985	5.238	-0.237	0.000	0.00	0.016	0.0		0.0	OK			
S2.001	7	360 minute	10 year	Winter	I+40%	5.910	5.238	-0.162	0.000	0.00	8.545	0.0	335	0.0	OK			
S3.000	8	15 minute	10 year	Summer	I+40%	6.750	5.940	-0.300	0.000	0.00	0.000	0.0		0.0	OK			

10 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 70 Units Perm Paving RevC

										Water	Surcharged	Flooded			Maximum	Half Drain	Pipe	Status
US/MH							US/CL	Level	Depth	Volume	Flow /	Maximum	Velocity	Time	Flow			
PN	Name	Event					(m)	(m)	(m)	(m³)	Cap.	Vol (m³)	(m/s)	(mins)	(l/s)			
S3.001	9	600 minute	10 year	Winter	I+40%	6.210	5.782	0.082	0.000	0.00	19.006	0.0			0.0	SURCHARGED		
S4.000	10	1440 minute	10 year	Winter	I+40%	7.225	6.509	-0.206	0.000	0.00	0.025	0.0			0.0	OK		
S4.001	11	1440 minute	10 year	Winter	I+40%	7.110	6.510	-0.090	0.000	0.01	6.417	0.0	1281		0.2	OK		
S5.000	12	1440 minute	10 year	Winter	I+40%	7.250	6.515	-0.135	0.000	0.00	0.045	0.0			0.0	OK		
S5.001	13	1440 minute	10 year	Winter	I+40%	7.160	6.515	-0.135	0.000	0.01	7.799	0.0			0.3	OK		
S5.002	14	1440 minute	10 year	Winter	I+40%	7.160	6.515	0.015	0.000	0.21	37.644	0.1			1.1	SURCHARGED		
S5.003	15	1440 minute	10 year	Winter	I+40%	7.135	6.510	0.047	0.000	0.26	1.084	0.1			1.1	SURCHARGED		
S4.002	16	1440 minute	10 year	Winter	I+40%	7.110	6.510	-0.090	0.000	0.03	6.709	0.0			0.7	OK		
S4.003	17	1440 minute	10 year	Winter	I+40%	7.120	6.510	-0.090	0.000	0.02	6.118	0.0			0.5	OK		
S4.004	18	1440 minute	10 year	Winter	I+40%	7.125	6.510	-0.090	0.000	0.00	13.041	0.0			0.0	OK		
S6.000	19	960 minute	10 year	Winter	I+40%	7.240	6.707	-0.023	0.000	0.00	0.077	0.0			0.0	OK		
S6.001	20	960 minute	10 year	Winter	I+40%	7.040	6.707	0.177	0.000	0.00	14.634	0.0			0.0	SURCHARGED		
S6.002	21	360 minute	10 year	Winter	I+40%	6.810	6.220	-0.080	0.000	0.00	7.827	0.0			0.0	OK		
S7.000	22	360 minute	10 year	Winter	I+40%	6.130	5.392	-0.228	0.000	0.00	0.019	0.0			0.0	OK		
S7.001	23	360 minute	10 year	Winter	I+40%	6.000	5.392	-0.098	0.000	0.00	10.118	0.0			0.0	OK		
S8.000	24	720 minute	10 year	Winter	I+40%	7.110	6.331	-0.269	0.000	0.00	0.029	0.0			0.0	OK		
S8.001	25	720 minute	10 year	Winter	I+40%	6.720	6.331	0.121	0.000	0.00	3.042	0.0			0.0	SURCHARGED		

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 70 Units Perm Paving RevC

Simulation Criteria

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

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 12 Number of Storage Structures 17 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Site Location GB 497682 103581 SU 97682 03581 Cv (Summer) 0.750
 FEH Rainfall Version 2013 Data Type Point Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 150.0 DVD Status ON
 Analysis Timestep 2.5 Second Increment (Extended) Inertia Status ON
 DTS Status ON

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
 Return Period(s) (years) 10, 100
 Climate Change (%) 40, 40

WARNING: Half Drain Time has not been calculated as the structure is too full.

								Water	Surcharged	Flooded				Maximum	Half Drain	Pipe	Status
US/MH				US/CL				Level	Depth	Volume	Flow /	Maximum	Velocity	Time	Flow		
PN	Name	Event		(m)	(m)	(m)	(m³)	Cap.	Vol (m³)	(m/s)	(mins)	(l/s)					
S1.000	1	4320 minute	100 year Winter I+40%	7.250	6.921	0.181	0.000	0.01	114.870	0.1		0.9	SURCHARGED				
S1.001	2	4320 minute	100 year Winter I+40%	7.125	6.920	0.305	0.000	0.01	30.116	0.0		1.0	SURCHARGED				
S1.002	3	4320 minute	100 year Winter I+40%	6.925	6.720	0.305	0.000	0.01	18.527	0.6	3278	1.0	SURCHARGED				
S1.003	4	4320 minute	100 year Winter I+40%	6.425	6.218	0.303	0.000	0.01	20.085	0.5	2367	0.8	SURCHARGED				
S1.004	5	10080 minute	100 year Winter I+40%	6.000	5.933	0.443	0.000	0.00	36.275	0.0	2155	0.0	FLOOD RISK				
S2.000	6	360 minute	100 year Winter I+40%	5.985	5.310	-0.165	0.000	0.00	0.037	0.0		0.0	OK				
S2.001	7	360 minute	100 year Winter I+40%	5.910	5.310	-0.090	0.000	0.00	14.871	0.0		0.0	OK				
S3.000	8	15 minute	100 year Summer I+40%	6.750	5.940	-0.300	0.000	0.00	0.000	0.0		0.0	OK				

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 70 Units Perm Paving RevC

										Water	Surcharged	Flooded			Maximum	Half Drain	Pipe	Status
US/MH								US/CL	Level	Depth	Volume	Flow /	Maximum	Velocity	Time	Flow		
PN	Name	Event					(m)	(m)	(m)	(m³)	Cap.	Vol	(m³)	(m/s)	(mins)	(l/s)		
S3.001	9	600 minute	100 year	Winter	I+40%	6.210	5.888	0.188	0.000	0.00	30.730	0.0				0.0	SURCHARGED	
S4.000	10	2160 minute	100 year	Winter	I+40%	7.225	6.620	-0.095	0.000	0.00	0.056	0.0				0.0	OK	
S4.001	11	2160 minute	100 year	Winter	I+40%	7.110	6.620	0.020	0.000	0.01	11.121	0.0				0.2	SURCHARGED	
S5.000	12	2160 minute	100 year	Winter	I+40%	7.250	6.625	-0.025	0.000	0.00	0.076	0.0				0.0	OK	
S5.001	13	2160 minute	100 year	Winter	I+40%	7.160	6.625	-0.025	0.000	0.01	13.155	0.0				0.3	OK	
S5.002	14	2160 minute	100 year	Winter	I+40%	7.160	6.625	0.125	0.000	0.23	63.116	0.1				1.2	SURCHARGED	
S5.003	15	2160 minute	100 year	Winter	I+40%	7.135	6.621	0.158	0.000	0.27	1.239	0.1				1.2	SURCHARGED	
S4.002	16	2160 minute	100 year	Winter	I+40%	7.110	6.620	0.020	0.000	0.03	10.110	0.0				0.7	SURCHARGED	
S4.003	17	2160 minute	100 year	Winter	I+40%	7.120	6.620	0.020	0.000	0.02	9.372	0.0				0.5	SURCHARGED	
S4.004	18	2160 minute	100 year	Winter	I+40%	7.125	6.620	0.020	0.000	0.00	19.972	0.0				0.0	SURCHARGED	
S6.000	19	480 minute	100 year	Winter	I+40%	7.240	6.832	0.102	0.000	0.00	0.112	0.0				0.0	SURCHARGED	
S6.001	20	480 minute	100 year	Winter	I+40%	7.040	6.832	0.302	0.000	0.01	19.142	0.1				0.8	SURCHARGED	
S6.002	21	720 minute	100 year	Winter	I+40%	6.810	6.361	0.061	0.000	0.00	17.767	0.0				0.0	SURCHARGED	
S7.000	22	480 minute	100 year	Winter	I+40%	6.130	5.485	-0.135	0.000	0.00	0.045	0.0				0.0	OK	
S7.001	23	480 minute	100 year	Winter	I+40%	6.000	5.485	-0.005	0.000	0.00	17.183	0.0				0.0	OK	
S8.000	24	960 minute	100 year	Winter	I+40%	7.110	6.472	-0.128	0.000	0.00	0.189	0.0				0.1	OK	
S8.001	25	960 minute	100 year	Winter	I+40%	6.720	6.472	0.262	0.000	0.00	4.822	0.0				0.0	SURCHARGED	