

Cole Easdon Consultants		Page 1
York House Edison Park Dorcan Way Swindon SN3 3RB	Hayling Island Permeable Paving Area 5	
Date June 2014 File cascade PP3-4-5-Ditch.casx	Designed By AD Checked By	
Elstree Computing Ltd	Source Control W.12.4	

Cascade Summary of Results for PP Area 5.srcx

Upstream Outflow To Overflow To
Structures

(None) PP AREA 4.srcx (None)

Half Drain Time : 282 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	4.474	0.374	0.0	5.5	5.5	100.7	O K
30 min Summer	4.599	0.499	0.0	6.3	6.3	134.2	O K
60 min Summer	4.720	0.620	0.0	7.0	7.0	166.9	O K
120 min Summer	4.817	0.717	0.0	7.6	7.6	193.2	O K
180 min Summer	4.848	0.748	0.0	7.7	7.7	201.6	O K
240 min Summer	4.855	0.755	0.0	7.8	7.8	203.6	O K
360 min Summer	4.857	0.757	0.0	7.8	7.8	204.1	O K
480 min Summer	4.851	0.751	0.0	7.7	7.7	202.4	O K
600 min Summer	4.839	0.739	0.0	7.7	7.7	199.1	O K
720 min Summer	4.823	0.723	0.0	7.6	7.6	194.9	O K
960 min Summer	4.789	0.689	0.0	7.4	7.4	185.5	O K
1440 min Summer	4.719	0.619	0.0	7.0	7.0	166.6	O K
2160 min Summer	4.628	0.528	0.0	6.5	6.5	142.0	O K
2880 min Summer	4.554	0.454	0.0	6.1	6.1	122.2	O K
4320 min Summer	4.446	0.346	0.0	5.3	5.3	93.0	O K
5760 min Summer	4.371	0.271	0.0	4.7	4.7	72.7	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	115.731	18
30 min Summer	77.804	33
60 min Summer	49.937	62
120 min Summer	30.956	122
180 min Summer	23.058	180
240 min Summer	18.577	206
360 min Summer	13.656	270
480 min Summer	10.974	336
600 min Summer	9.254	404
720 min Summer	8.046	474
960 min Summer	6.447	610
1440 min Summer	4.709	880
2160 min Summer	3.432	1276
2880 min Summer	2.739	1644
4320 min Summer	1.989	2380
5760 min Summer	1.583	3112

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Date June 2014 File cascade PP3-4-5-Ditch.casx	Designed By AD Checked By	
Elstree Computing Ltd	Source Control W.12.4	

Cascade Summary of Results for PP Area 5.srcx

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m ³)	Status
7200 min Summer	4.317	0.217	0.0	4.3	4.3	58.1	O K
8640 min Summer	4.277	0.177	0.0	3.9	3.9	47.3	O K
10080 min Summer	4.247	0.147	0.0	3.6	3.6	39.3	O K
15 min Winter	4.522	0.422	0.0	5.8	5.8	113.6	O K
30 min Winter	4.662	0.562	0.0	6.7	6.7	151.4	O K
60 min Winter	4.800	0.700	0.0	7.5	7.5	188.7	O K
120 min Winter	4.916	0.816	0.0	8.1	8.1	219.9	Flood Risk
180 min Winter	4.957	0.857	0.0	8.2	8.2	230.9	Flood Risk
240 min Winter	4.966	0.866	0.0	8.3	8.3	233.5	Flood Risk
360 min Winter	4.962	0.862	0.0	8.3	8.3	232.4	Flood Risk
480 min Winter	4.951	0.851	0.0	8.2	8.2	229.3	Flood Risk
600 min Winter	4.931	0.831	0.0	8.1	8.1	223.9	Flood Risk
720 min Winter	4.906	0.806	0.0	8.0	8.0	217.3	Flood Risk
960 min Winter	4.853	0.753	0.0	7.7	7.7	203.0	O K
1440 min Winter	4.750	0.650	0.0	7.2	7.2	175.0	O K
2160 min Winter	4.621	0.521	0.0	6.5	6.5	140.3	O K
2880 min Winter	4.523	0.423	0.0	5.9	5.9	113.8	O K
4320 min Winter	4.389	0.289	0.0	4.9	4.9	77.5	O K
5760 min Winter	4.305	0.205	0.0	4.2	4.2	55.0	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
7200 min Summer	1.325	3824
8640 min Summer	1.147	4576
10080 min Summer	1.015	5248
15 min Winter	115.731	18
30 min Winter	77.804	33
60 min Winter	49.937	62
120 min Winter	30.956	118
180 min Winter	23.058	174
240 min Winter	18.577	228
360 min Winter	13.656	284
480 min Winter	10.974	360
600 min Winter	9.254	438
720 min Winter	8.046	512
960 min Winter	6.447	662
1440 min Winter	4.709	940
2160 min Winter	3.432	1344
2880 min Winter	2.739	1728
4320 min Winter	1.989	2464
5760 min Winter	1.583	3176

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Date June 2014 File cascade PP3-4-5-Ditch.casx	Designed By AD Checked By	
Elstree Computing Ltd	Source Control W.12.4	

Cascade Summary of Results for PP Area 5.srcx

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m ³)	Status
7200 min Winter	4.251	0.151	0.0	3.6	3.6	40.4	O K
8640 min Winter	4.215	0.115	0.0	3.2	3.2	30.6	O K
10080 min Winter	4.189	0.089	0.0	2.9	2.9	23.6	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
7200 min Winter	1.325	3888
8640 min Winter	1.147	4584
10080 min Winter	1.015	5336

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Elstree Computing Ltd	Source Control W.12.4	

Cascade Model Details for PP Area 5.srcx

Storage is Online Cover Level (m) 5.200

Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	30.0
Membrane Percolation (mm/hr)	1000	Length (m)	30.0
Max Percolation (l/s)	250.0	Slope (1:X)	10000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	4.100	Cap Volume Depth (m)	0.000

Orifice Outflow Control

Diameter (m) 0.065 Discharge Coefficient 0.600 Invert Level (m) 4.050

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York House Edison Park	Hayling Island		
Dorcan Way	Permeable Paving		
Swindon SN3 3RB	Area 4		
Date June 2014	Designed By AD		
File cascade PP3-4-5-Ditch.casx	Checked By		
Elstree Computing Ltd	Source Control W.12.4		

Cascade Summary of Results for PP AREA 4.srcx							
Upstream Structures	Outflow To	Overflow To					
PP Area 5.srcx	4059-Ph2-Ditch.srcx	(None)					
Half Drain Time : 325 minutes.							
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max E Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	4.222	0.222	0.0	4.3	4.3	71.9	O K
30 min Summer	4.303	0.303	0.0	5.0	5.0	98.6	O K
60 min Summer	4.393	0.393	0.0	5.7	5.7	128.0	O K
120 min Summer	4.490	0.490	0.0	6.3	6.3	159.6	O K
180 min Summer	4.548	0.548	0.0	6.6	6.6	178.5	O K
240 min Summer	4.587	0.587	0.0	6.9	6.9	191.4	O K
360 min Summer	4.643	0.643	0.0	7.2	7.2	209.6	O K
480 min Summer	4.682	0.682	0.0	7.4	7.4	222.3	O K
600 min Summer	4.707	0.707	0.0	7.5	7.5	230.5	O K
720 min Summer	4.720	0.720	0.0	7.6	7.6	234.7	O K
960 min Summer	4.720	0.720	0.0	7.6	7.6	234.8	O K
1440 min Summer	4.701	0.701	0.0	7.5	7.5	228.4	O K
2160 min Summer	4.663	0.663	0.0	7.3	7.3	216.2	O K
2880 min Summer	4.624	0.624	0.0	7.1	7.1	203.2	O K
4320 min Summer	4.545	0.545	0.0	6.6	6.6	177.4	O K
5760 min Summer	4.472	0.472	0.0	6.2	6.2	153.8	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	115.731	158
30 min Summer	77.804	189
60 min Summer	49.937	224
120 min Summer	30.956	270
180 min Summer	23.058	308
240 min Summer	18.577	342
360 min Summer	13.656	406
480 min Summer	10.974	484
600 min Summer	9.254	602
720 min Summer	8.046	722
960 min Summer	6.447	916
1440 min Summer	4.709	1140
2160 min Summer	3.432	1512
2880 min Summer	2.739	1892
4320 min Summer	1.989	2652
5760 min Summer	1.583	3400

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York House Edison Park Dorcan Way Swindon SN3 3RB	Hayling Island Permeable Paving Area 4	
Date June 2014 File cascade PP3-4-5-Ditch.casx	Designed By AD Checked By	
Elstree Computing Ltd	Source Control W.12.4	

Cascade Summary of Results for PP AREA 4.srcx

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m ³)	Status
7200 min Summer	4.409	0.409	0.0	5.8	5.8	133.2	O K
8640 min Summer	4.357	0.357	0.0	5.4	5.4	116.0	O K
10080 min Summer	4.313	0.313	0.0	5.1	5.1	101.7	O K
15 min Winter	4.250	0.250	0.0	4.6	4.6	81.2	O K
30 min Winter	4.342	0.342	0.0	5.3	5.3	111.1	O K
60 min Winter	4.442	0.442	0.0	6.0	6.0	144.0	O K
120 min Winter	4.551	0.551	0.0	6.7	6.7	179.5	O K
180 min Winter	4.616	0.616	0.0	7.0	7.0	200.7	O K
240 min Winter	4.661	0.661	0.0	7.3	7.3	215.3	O K
360 min Winter	4.724	0.724	0.0	7.6	7.6	236.0	O K
480 min Winter	4.769	0.769	0.0	7.8	7.8	250.7	Flood Risk
600 min Winter	4.800	0.800	0.0	8.0	8.0	260.7	Flood Risk
720 min Winter	4.818	0.818	0.0	8.1	8.1	266.7	Flood Risk
960 min Winter	4.828	0.828	0.0	8.1	8.1	269.9	Flood Risk
1440 min Winter	4.799	0.799	0.0	8.0	8.0	260.6	Flood Risk
2160 min Winter	4.743	0.743	0.0	7.7	7.7	242.2	Flood Risk
2880 min Winter	4.676	0.676	0.0	7.3	7.3	220.2	O K
4320 min Winter	4.546	0.546	0.0	6.6	6.6	177.7	O K
5760 min Winter	4.438	0.438	0.0	6.0	6.0	142.5	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
7200 min Summer	1.325	4120
8640 min Summer	1.147	4840
10080 min Summer	1.015	5552
15 min Winter	115.731	167
30 min Winter	77.804	198
60 min Winter	49.937	236
120 min Winter	30.956	282
180 min Winter	23.058	320
240 min Winter	18.577	354
360 min Winter	13.656	420
480 min Winter	10.974	486
600 min Winter	9.254	596
720 min Winter	8.046	710
960 min Winter	6.447	924
1440 min Winter	4.709	1182
2160 min Winter	3.432	1580
2880 min Winter	2.739	1992
4320 min Winter	1.989	2768
5760 min Winter	1.583	3520

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York House Edison Park Dorcan Way Swindon SN3 3RB	Hayling Island Permeable Paving Area 4	
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Elstree Computing Ltd	Source Control W.12.4	

Cascade Summary of Results for PP AREA 4.srcx

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m ³)	Status
7200 min Winter	4.353	0.353	0.0	5.4	5.4	114.7	O K
8640 min Winter	4.288	0.288	0.0	4.9	4.9	93.5	O K
10080 min Winter	4.238	0.238	0.0	4.5	4.5	77.1	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
7200 min Winter	1.325	4248
8640 min Winter	1.147	4928
10080 min Winter	1.015	5648

Hayling Island Permeable Paving Area 4
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Designed By AD

Checked By

Source Control W.12.4

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+30

Total Area (ha) 0.327

0-4 0.327

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York House Edison Park Dorcan Way Swindon SN3 3RB	Hayling Island Permeable Paving Area 3	
Date June 2014 File cascade PP3-4-5-Ditch.casx	Designed By AD Checked By	
Elstree Computing Ltd	Source Control W.12.4	

Cascade Summary of Results for PP Area 3.srcx

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m ³)	Status
7200 min Winter	4.194	0.104	0.0	0.7	0.7	4.1	O K
8640 min Winter	4.164	0.074	0.0	0.6	0.6	2.9	O K
10080 min Winter	4.144	0.054	0.0	0.5	0.5	2.1	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
7200 min Winter	1.325	3816
8640 min Winter	1.147	4496
10080 min Winter	1.015	5240

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York House Edison Park Dorcan Way Swindon SN3 3RB	Hayling Island Permeable Paving Area 3	
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Elstree Computing Ltd	Source Control W.12.4	

Cascade Rainfall Details for PP Area 3.srcx

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+30

Time / Area Diagram

Total Area (ha) 0.090

Time (mins)	Area (ha)
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0-4	0.090
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York House Edison Park
Dorcan Way
Swindon SN3 3RB

Hayling Island
Permeable Paving
Area 3

Date June 2014
File cascade PP3-4-5-Ditch.casx

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Elstree Computing Ltd

Source Control W.12.4



Cascade Model Details for PP Area 3.srcx

Storage is	Online	Cover Level (m)	5.300
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Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	11.5
Membrane Percolation (mm/hr)	1000	Length (m)	11.5
Max Percolation (l/s)	36.7	Slope (1:X)	10000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	4.090	Cap Volume Depth (m)	0.000

Orifice Outflow Control

Diameter (m)	0.030	Discharge Coefficient	0.600	Invert Level (m)	4.050
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Date June 2014 File cascade PP3-4-5-Ditch.casx	Designed By AD Checked By	
Elstree Computing Ltd	Source Control W.12.4	

Cascade Summary of Results for 4059-Ph2-Ditch.srcx

Upstream Outflow To Overflow To
Structures

PP AREA 4.srcx (None) (None)
PP Area 5.srcx
PP Area 3.srcx

Half Drain Time : 195 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m ³)	Status
15 min Summer	4.226	0.376	0.0	4.4	4.4	24.8	O K
30 min Summer	4.311	0.461	0.0	4.9	4.9	38.5	O K
60 min Summer	4.398	0.548	0.0	5.4	5.4	55.3	O K
120 min Summer	4.489	0.639	0.0	5.9	5.9	74.3	O K
180 min Summer	4.540	0.690	0.0	6.1	6.1	85.7	O K
240 min Summer	4.574	0.724	0.0	6.3	6.3	93.6	O K
360 min Summer	4.620	0.770	0.0	6.5	6.5	104.6	O K
480 min Summer	4.651	0.801	0.0	6.6	6.6	112.4	O K
600 min Summer	4.674	0.824	0.0	6.7	6.7	118.0	O K
720 min Summer	4.690	0.840	0.0	6.8	6.8	122.1	O K
960 min Summer	4.710	0.860	0.0	6.8	6.8	127.3	O K
1440 min Summer	4.722	0.872	0.0	6.9	6.9	130.4	O K
2160 min Summer	4.698	0.848	0.0	6.8	6.8	124.1	O K
2880 min Summer	4.665	0.815	0.0	6.7	6.7	115.7	O K
4320 min Summer	4.602	0.752	0.0	6.4	6.4	100.2	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	115.731	362
30 min Summer	77.804	458
60 min Summer	49.937	558
120 min Summer	30.956	660
180 min Summer	23.058	724
240 min Summer	18.577	776
360 min Summer	13.656	868
480 min Summer	10.974	950
600 min Summer	9.254	1028
720 min Summer	8.046	1104
960 min Summer	6.447	1256
1440 min Summer	4.709	1572
2160 min Summer	3.432	2012
2880 min Summer	2.739	2356
4320 min Summer	1.989	3064

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Elstree Computing Ltd	Source Control W.12.4	

Cascade Summary of Results for 4059-Ph2-Ditch.srcx

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m ³)	Status
5760 min Winter	4.533	0.683	0.0	6.1	6.1	84.1	O K
7200 min Winter	4.438	0.588	0.0	5.6	5.6	63.4	O K
8640 min Winter	4.357	0.507	0.0	5.2	5.2	47.2	O K
10080 min Winter	4.290	0.440	0.0	4.8	4.8	34.8	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
5760 min Winter	1.583	3912
7200 min Winter	1.325	4600
8640 min Winter	1.147	5280
10080 min Winter	1.015	5928

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Cascade Rainfall Details for 4059-Ph2-Ditch.srcx

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+30

Time / Area Diagram

Total Area (ha) 0.000

Time (mins)	Area (ha)
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0-4	0.000
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Elstree Computing Ltd	Source Control W.12.4	

Cascade Model Details for 4059-Ph2-Ditch.srcx

Storage is Online Cover Level (m) 5.200

Swale Structure

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	95.0
Infiltration Coefficient Side (m/hr)	0.00000	Side Slope (1:X)	1.0
Safety Factor	2.0	Slope (1:X)	200.0
Porosity	1.00	Cap Volume Depth (m)	0.000
Invert Level (m)	3.850	Cap Infiltration Depth (m)	0.000
Base Width (m)	1.5		

Complex Outflow Control

Orifice

Diameter (m) 0.060 Discharge Coefficient 0.600 Invert Level (m) 3.850

Weir

Discharge Coef 0.544 Width (m) 1.000 Invert Level (m) 4.850