

Peter Brett Associates LLP		Page 1
Caversham Bridge House	Green Park Village	
Waterman Place	Phase 1 - Main Avenue	
Reading RG1 8DN	Permeable Paving Depths	
Date 16th July 2010	Designed By VH	
File Main Avenue.SRC	Checked By	
Micro Drainage	Source Control W.11.4 net	

Summary of Results for 100 year Return Period (+30%)

Half Drain Time : 331 minutes

Storm Duration (mins)	Maximum Filtration (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Maximum Volume (m³)	Status
15 Summer	2.4	2.4	39.6778	0.4777	41.1	0 K
30 Summer	2.4	2.4	39.7668	0.5667	53.8	0 K
60 Summer	2.4	2.4	39.8493	0.6493	65.7	0 K
120 Summer	2.4	2.4	39.9153	0.7153	75.1	FLOOD RISK
180 Summer	2.4	2.4	39.9363	0.7363	78.1	FLOOD RISK
240 Summer	2.4	2.4	39.9388	0.7388	78.5	FLOOD RISK
360 Summer	2.4	2.4	39.9268	0.7268	76.7	FLOOD RISK
480 Summer	2.4	2.4	39.9128	0.7128	74.8	FLOOD RISK
600 Summer	2.4	2.4	39.8973	0.6973	72.5	0 K
720 Summer	2.4	2.4	39.8803	0.6803	70.1	0 K
960 Summer	2.4	2.4	39.8448	0.6448	65.0	0 K
1440 Summer	2.4	2.4	39.7783	0.5783	55.4	0 K
2160 Summer	2.4	2.4	39.6923	0.4922	43.2	0 K
2880 Summer	2.4	2.4	39.6257	0.4257	33.6	0 K
4320 Summer	2.2	2.2	39.5493	0.3492	22.9	0 K
5760 Summer	1.9	1.9	39.5013	0.3012	17.0	0 K
7200 Summer	1.7	1.7	39.4653	0.2652	13.2	0 K
8640 Summer	1.5	1.5	39.4363	0.2362	10.5	0 K
10080 Summer	1.3	1.3	39.4138	0.2137	8.6	0 K
15 Winter	2.4	2.4	39.7153	0.5152	46.5	0 K
30 Winter	2.4	2.4	39.8158	0.6158	60.9	0 K
60 Winter	2.4	2.4	39.9113	0.7113	74.5	FLOOD RISK
120 Winter	2.4	2.4	39.9898	0.7898	85.7	FLOOD RISK
180 Winter	2.4	2.4	40.0188	0.8188	89.9	FLOOD RISK
240 Winter	2.4	2.4	40.0263	0.8263	91.0	FLOOD RISK
360 Winter	2.4	2.4	40.0128	0.8128	89.1	FLOOD RISK
480 Winter	2.4	2.4	39.9923	0.7923	86.1	FLOOD RISK
600 Winter	2.4	2.4	39.9708	0.7708	83.1	FLOOD RISK
720 Winter	2.4	2.4	39.9468	0.7468	79.6	FLOOD RISK
960 Winter	2.4	2.4	39.8958	0.6958	72.3	0 K
1440 Winter	2.4	2.4	39.7948	0.5948	57.8	0 K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
15 Summer	119.87	18
30 Summer	78.79	33
60 Summer	49.39	62
120 Summer	29.96	122
180 Summer	22.08	180
240 Summer	17.69	240
360 Summer	12.84	292
480 Summer	10.24	354
600 Summer	8.58	422
720 Summer	7.43	490
960 Summer	5.91	624
1440 Summer	4.27	892
2160 Summer	3.08	1272
2880 Summer	2.45	1616
4320 Summer	1.76	2332
5760 Summer	1.39	3048
7200 Summer	1.16	3744
8640 Summer	1.00	4488
10080 Summer	0.88	5152
15 Winter	119.87	18
30 Winter	78.79	33
60 Winter	49.39	62
120 Winter	29.96	120
180 Winter	22.08	176
240 Winter	17.69	232
360 Winter	12.84	338
480 Winter	10.24	380
600 Winter	8.58	456
720 Winter	7.43	534
960 Winter	5.91	682
1440 Winter	4.27	964

Peter Brett Associates LLP		Page 2
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Storm Duration (mins)	Maximum Filtration (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Maximum Volume (m³)	Status
2160 Winter	2.4	2.4	39.6677	0.4677	39.6	0 K
2880 Winter	2.4	2.4	39.5827	0.3827	27.4	0 K
4320 Winter	1.9	1.9	39.5023	0.3022	17.1	0 K
5760 Winter	1.6	1.6	39.4493	0.2492	11.6	0 K
7200 Winter	1.3	1.3	39.4118	0.2117	8.4	0 K
8640 Winter	1.1	1.1	39.3838	0.1838	6.3	0 K
10080 Winter	1.0	1.0	39.3628	0.1628	5.0	0 K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
2160 Winter	3.08	1340
2880 Winter	2.45	1644
4320 Winter	1.76	2376
5760 Winter	1.39	3056
7200 Winter	1.16	3752
8640 Winter	1.00	4496
10080 Winter	0.88	5152

Peter Brett Associates LLP		Page 3
Caversham Bridge House Waterman Place Reading RG1 8DN	Green Park Village Phase 1 - Main Avenue Permeable Paving Depths	
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Rainfall Details

Region	ENG+WAL	Cv (Summer)	0.750	Summer Storms	Yes
Return Period (years)	100	Cv (Winter)	0.840	Winter Storms	Yes
M5-60 (mm)	18.800	Shortest Storm (mins)	15	Climate Change %	+30
Ratio-R	0.400	Longest Storm (mins)	10080		

Time / Area Diagram

Total Area (ha) = 0.201

Time from:	(mins) to:	Area (ha)
0	4	0.201

Peter Brett Associates LLP		Page 4
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Porous Car Park Details

Infil Coef - Base (m/hr)	0.036000	Invert Level (m)	39.200
Membrane Percolation (mm/hr)	1000	Cover Level (m)	40.100
Safety Factor	2.0	Slope (1:x)	500.0
Porosity	0.30	Max Percolation (l/s)	132.6
Length (m)	191.0	Depression Storage (mm)	5
Width (m)	2.5	Evaporation (mm/day)	3

Note:

Effective depth

Depth = 0.9m Volume = $19.0 \times 2.5 \times 0.9 = 429.75\text{m}^3$

Area of lined paving = 335.4m^2

Effective depth = $429.75 / (335.4 + 477.5) = 0.529\text{m} = 0.550\text{m}$

The depth includes upper sub-base and lower sub-base