

#47 South Way, Bersted, Bognor Regis PO21 5EY Planning Reference BE/43/20/PL

The Design Parameters for the Proposed Self Draining Permeable Garage Access are as follows :-

Soil Infiltration Rate for the Sides is 6.447E-6 metres / second.

Soil Infiltration Rate for the Base is 6.447E-6 metres / second.

The Installation consists of a Structure of 20.00 metres Long by 3.20 metres Wide and 0.20 metres in Depth.

With a Cover Depth of 0.15 metres.

Percentage Void Space of 30%.

Impermeable Area specified as 64 square metres.

Using a Safety Factor of 2.0

The Side Areas are NOT Included in the Calculations with only a Factored Soil Infiltration Rate for the Base of 3.224E-6 metres / second.

The Rainfall Ratio for the Location is $r=0.36$

Rainfall Base Rate M5-60min the 5 Year Return Period Rainfall of 60 minutes Duration is 19.0mm.

All Levels are referenced to 'Above Ordinance Datum' (AOD)

The Highest Recorded Groundwater at the Location of the Proposed Structure is 7.424 metres at a depth of 0.796 metres Below Ground Level (BGL)

The Ground Level at the Location of the Proposed Structure is 8.200 metres

The Soffit Level of the Proposed Structure is 8.050 metres

The Base Level of the Proposed Structure is 7.850 metres

The Base of the Structure is 0.426 metres above the Highest Recorded Groundwater. This meets Building Regulations.

The Design Summary for the Proposed Self Draining Permeable Garage Access is as follows :-

For a 10 Year Return Storm Includes a 40% Increase for Climate Change.

The Design requires storage of 1.39 cubic metres out of 3.84 cubic metres available.

Therefore Storage is Passed with a Critical Storm occurring at 1 hour.

And the Half Drain Time is OK within the Allowable 24 hours Period at 0.93 hours.

For a 100 Year Return Storm Includes a 40% Increase for Climate Change.

The Design requires storage of 2.71 cubic metres out of 3.84 cubic metres available.

Therefore Storage is Passed with a Critical Storm occurring at 1 hour.

And the Half Drain Time is OK within the Allowable 24 hours Period at 1.83 hours.

10 Year Return Storm Includes a 40% Increase for Climate Change.

Storm Duration	Factor Z1-5	M5 Return Rainfall	Factor Z2-10	M10 Return Rainfall	Inflow Cu Metres	Outflow Cu Metres	Internal Water Level	Required Storage	Soakaway Status
5 minutes	0.360	6.80	1.190	11.40	0.729	0.062	35	0.667	-OK-
10 minutes	0.510	9.70	1.220	16.60	1.059	0.124	49	0.935	-OK-
15 minutes	0.620	11.80	1.220	20.10	1.288	0.186	57	1.102	-OK-
30 minutes	0.790	15.00	1.240	26.10	1.668	0.371	68	1.296	-OK-
1 hour	1.000	19.00	1.250	33.20	2.128	0.743	72	1.385	-OK-
2 hours	1.216	23.10	1.240	40.10	2.567	1.485	56	1.082	-OK-
3 hours	1.364	25.90	1.240	45.00	2.879	2.228	34	0.651	-OK-
4 hours	1.495	28.40	1.220	48.50	3.105	2.971	7	0.134	-OK-
5 hours	1.593	30.30	1.220	51.70	3.309	3.713	empty	none	-OK-
6 hours	1.670	31.70	1.220	54.20	3.468	4.456	empty	none	-OK-
7 hours	1.745	33.20	1.203	55.80	3.574	5.199	empty	none	-OK-
8 hours	1.805	34.30	1.203	57.80	3.697	5.942	empty	none	-OK-
9 hours	1.863	35.40	1.203	59.60	3.815	6.684	empty	none	-OK-
10 hours	1.915	36.40	1.203	61.30	3.922	7.427	empty	none	-OK-
11 hours	1.960	37.20	1.203	62.70	4.014	8.170	empty	none	-OK-
12 hours	2.005	38.10	1.190	63.50	4.062	8.912	empty	none	-OK-
14 hours	2.085	39.60	1.190	66.00	4.224	10.398	empty	none	-OK-
16 hours	2.155	40.90	1.190	68.20	4.366	11.883	empty	none	-OK-
18 hours	2.225	42.30	1.190	70.40	4.508	13.368	empty	none	-OK-
20 hours	2.295	43.60	1.180	72.00	4.610	14.854	empty	none	-OK-
22 hours	2.360	44.80	1.180	74.10	4.741	16.339	empty	none	-OK-
24 hours	2.430	46.20	1.180	76.30	4.881	17.825	empty	none	-OK-

Effective Volume of the Installation for an M10 Return Period is 3.84 cubic metres.

Maximum Available (Effective) Outflow Surface Area at M10 Return is 64.00 square metres referenced to the Top of the Structure.

Maximum Allowable Pre-Flood Water Level for 10 Year Return (Top of Structure) is 200mm.

For a 10 Year Return Period the Critical Storm occurs at 1 hour.

With a Maximum Internal Structure Critical Water Level of 72mm.

Requiring a Maximum (Critical) Storage Capacity of 1.39 cubic metres.

The Outflow Surface Area for the Critical Storm Duration for the M10 Return is 64.00 square metres referenced to the Critical Water Level.

Half Drain Time for a 10 Year Return Critical Storm is 0.93 hours.

100 Year Return Storm Includes a 40% Increase for Climate Change.

Storm	Factor	M5 Return	Factor	M100 Return	Inflow	Outflow	Internal	Required	Soakaway
Duration	Z1-5	Rainfall	Z2-100	Rainfall	Cu Metres	Cu Metres	Water Level	Storage	Status
5 minutes	0.360	6.80	1.790	17.10	1.097	0.062	54	1.035	-OK-
10 minutes	0.510	9.70	1.910	25.90	1.658	0.124	80	1.535	-OK-
15 minutes	0.620	11.80	1.910	31.50	2.016	0.186	95	1.830	-OK-
30 minutes	0.790	15.00	1.990	41.80	2.676	0.371	120	2.305	-OK-
1 hour	1.000	19.00	2.030	54.00	3.456	0.743	141	2.713	-OK-
2 hours	1.216	23.10	2.010	65.00	4.161	1.485	139	2.676	-OK-
3 hours	1.364	25.90	2.010	72.90	4.667	2.228	127	2.439	-OK-
4 hours	1.495	28.40	1.970	78.30	5.014	2.971	106	2.043	-OK-
5 hours	1.593	30.30	1.970	83.50	5.342	3.713	85	1.629	-OK-
6 hours	1.670	31.70	1.970	87.50	5.601	4.456	60	1.145	-OK-
7 hours	1.745	33.20	1.930	89.60	5.733	5.199	28	0.535	-OK-
8 hours	1.805	34.30	1.930	92.70	5.931	5.942	empty	none	-OK-
9 hours	1.863	35.40	1.930	95.60	6.121	6.684	empty	none	-OK-
10 hours	1.915	36.40	1.930	98.30	6.292	7.427	empty	none	-OK-
11 hours	1.960	37.20	1.930	100.60	6.440	8.170	empty	none	-OK-
12 hours	2.005	38.10	1.890	100.80	6.451	8.912	empty	none	-OK-
14 hours	2.085	39.60	1.890	104.80	6.709	10.398	empty	none	-OK-
16 hours	2.155	40.90	1.890	108.30	6.934	11.883	empty	none	-OK-
18 hours	2.225	42.30	1.890	111.90	7.159	13.368	empty	none	-OK-
20 hours	2.295	43.60	1.855	113.20	7.247	14.854	empty	none	-OK-
22 hours	2.360	44.80	1.855	116.40	7.453	16.339	empty	none	-OK-
24 hours	2.430	46.20	1.855	119.90	7.674	17.825	empty	none	-OK-

Effective Volume of the Installation for an M100 Return Period is 3.84 cubic metres.

Maximum Available (Effective) Outflow Surface Area at M100 Return is 64.00 square metres referenced to the Top of the Structure.

Maximum Allowable Pre-Flood Water Level for 100 Year Return (Top of Structure) is 200mm.

For a 100 Year Return Period the Critical Storm occurs at 1 hour.

With a Maximum Internal Structure Critical Water Level of 141mm.

Requiring a Maximum (Critical) Storage Capacity of 2.71 cubic metres.

The Outflow Surface Area for the Critical Storm Duration for the M100 Return is 64.00 square metres referenced to the Critical Water Level.

Half Drain Time for a 100 Year Return Critical Storm is 1.83 hours.

* * * END of REPORT * * *