

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

The Design Parameters for the Proposed Front Permeable Paving are as follows :-

Soil Infiltration Rate for the Sides is 6.447×10^{-6} metres / second.

Soil Infiltration Rate for the Base is 6.447×10^{-6} metres / second.

The Installation consists of a Structure of 18.00 metres Long by 8.50 metres Wide and 0.40 metres in Depth.

With a Cover Depth of 0.15 metres.

Percentage Void Space of 30%.

Impermeable Area specified as 284 square metres (itself of 153 sq.metres + Plot #1 total roof area of 106 sq.metres + Plot #2 front roof area of 25 sq.metres).

Using a Safety Factor of 3.0

The Side Areas are NOT Included in the Calculations with only a Factored Soil Infiltration Rate for the Base of 2.149×10^{-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.

Lowest Incoming Pipe Invert Height is 220mm above the Installation Base.

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

The Highest Recorded Groundwater at the Location of the Proposed Structure is 7.470 metres at a depth of 0.780 metres Below Ground Level (BGL)

The Ground Level at the Location of the Proposed Structure is 8.250 metres

The Invert Level of the Lowest Incoming Pipe on the Proposed Structure is 7.920 metres

The Soffit Level of the Proposed Structure is 8.100 metres

The Base Level of the Proposed Structure is 7.700 metres

The Base of the Structure is 0.230 metres above the Highest Recorded Groundwater. This meets Building Regulations.

The Design Summary for the Proposed Front Permeable Paving is as follows :-

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

The Design requires storage of 9.23 cubic metres out of 10.10 cubic metres available.

Therefore Storage is Passed with a Critical Storm occurring at 3 hours.

And the Half Drain Time is OK within the Allowable 24 hours Period at 3.90 hours.

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

The Design requires storage of 17.79 cubic metres out of 18.36 cubic metres available.

Therefore Storage is Passed with a Critical Storm occurring at 5 hours.

And the Half Drain Time is OK within the Allowable 24 hours Period at 7.51 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	3.236	0.099	68	3.138	-OK-
10 minutes	0.510	9.70	1.220	16.60	4.700	0.197	98	4.503	-OK-
15 minutes	0.620	11.80	1.220	20.10	5.714	0.296	118	5.418	-OK-
30 minutes	0.790	15.00	1.240	26.10	7.400	0.592	148	6.808	-OK-
1 hour	1.000	19.00	1.250	33.20	9.443	1.184	180	8.259	-OK-
2 hours	1.216	23.10	1.240	40.10	11.391	2.367	197	9.023	-OK-
3 hours	1.364	25.90	1.240	45.00	12.777	3.551	201	9.226	-OK-
4 hours	1.495	28.40	1.220	48.50	13.778	4.735	197	9.044	-OK-
5 hours	1.593	30.30	1.220	51.70	14.682	5.918	191	8.763	-OK-
6 hours	1.670	31.70	1.220	54.20	15.391	7.102	181	8.289	-OK-
7 hours	1.745	33.20	1.203	55.80	15.858	8.286	165	7.573	-OK-
8 hours	1.805	34.30	1.203	57.80	16.404	9.469	151	6.934	-OK-
9 hours	1.863	35.40	1.203	59.60	16.931	10.653	137	6.278	-OK-
10 hours	1.915	36.40	1.203	61.30	17.403	11.837	121	5.567	-OK-
11 hours	1.960	37.20	1.203	62.70	17.812	13.020	104	4.792	-OK-
12 hours	2.005	38.10	1.190	63.50	18.024	14.204	83	3.820	-OK-
14 hours	2.085	39.60	1.190	66.00	18.744	16.571	47	2.172	-OK-
16 hours	2.155	40.90	1.190	68.20	19.373	18.939	9	0.434	-OK-
18 hours	2.225	42.30	1.190	70.40	20.002	21.306	empty	none	-OK-
20 hours	2.295	43.60	1.180	72.00	20.458	23.673	empty	none	-OK-
22 hours	2.360	44.80	1.180	74.10	21.037	26.041	empty	none	-OK-
24 hours	2.430	46.20	1.180	76.30	21.661	28.408	empty	none	-OK-

Effective Volume of the Installation for an M10 Return Period is 10.10 cubic metres.

Maximum Available (Effective) Outflow Surface Area at M10 Return is 153.00 square metres referenced to the Invert of the lowest incoming pipe.

Maximum Allowable Pre-Flood Water Level for 10 Year Return (Lowest Pipe Invert Level for Building Control) is 220mm.

For a 10 Year Return Period the Critical Storm occurs at 3 hours.

With a Maximum Internal Structure Critical Water Level of 201mm.

Requiring a Maximum (Critical) Storage Capacity of 9.23 cubic metres.

The Outflow Surface Area for the Critical Storm Duration for the M10 Return is 153.00 square metres referenced to the Critical Water Level.

Half Drain Time for a 10 Year Return Critical Storm is 3.90 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	4.868	0.099	104	4.769	-OK-
10 minutes	0.510	9.70	1.910	25.90	7.359	0.197	156	7.161	-OK-
15 minutes	0.620	11.80	1.910	31.50	8.946	0.296	188	8.650	-OK-
30 minutes	0.790	15.00	1.990	41.80	11.876	0.592	246	11.284	-OK-
1 hour	1.000	19.00	2.030	54.00	15.335	1.184	308	14.152	-OK-
2 hours	1.216	23.10	2.010	65.00	18.464	2.367	351	16.097	-OK-
3 hours	1.364	25.90	2.010	72.90	20.711	3.551	374	17.160	-OK-
4 hours	1.495	28.40	1.970	78.30	22.249	4.735	382	17.514	-OK-
5 hours	1.593	30.30	1.970	83.50	23.707	5.918	388	17.789	-OK-
6 hours	1.670	31.70	1.970	87.50	24.853	7.102	387	17.751	-OK-
7 hours	1.745	33.20	1.930	89.60	25.442	8.286	374	17.156	-OK-
8 hours	1.805	34.30	1.930	92.70	26.317	9.469	367	16.848	-OK-
9 hours	1.863	35.40	1.930	95.60	27.163	10.653	360	16.510	-OK-
10 hours	1.915	36.40	1.930	98.30	27.921	11.837	350	16.084	-OK-
11 hours	1.960	37.20	1.930	100.60	28.577	13.020	339	15.556	-OK-
12 hours	2.005	38.10	1.890	100.80	28.627	14.204	314	14.423	-OK-
14 hours	2.085	39.60	1.890	104.80	29.769	16.571	288	13.198	-OK-
16 hours	2.155	40.90	1.890	108.30	30.769	18.939	258	11.830	-OK-
18 hours	2.225	42.30	1.890	111.90	31.768	21.306	228	10.462	-OK-
20 hours	2.295	43.60	1.855	113.20	32.161	23.673	185	8.487	-OK-
22 hours	2.360	44.80	1.855	116.40	33.072	26.041	153	7.031	-OK-
24 hours	2.430	46.20	1.855	119.90	34.053	28.408	123	5.645	-OK-

Effective Volume of the Installation for an M100 Return Period is 18.36 cubic metres.

Maximum Available (Effective) Outflow Surface Area at M100 Return is 153.00 square metres referenced to the top of the Structure

Maximum Allowable Pre-Flood Water Level for 100 Year Return (Installation Height) is 400mm.

For a 100 Year Return Period the Critical Storm occurs at 5 hours.

With a Maximum Internal Structure Critical Water Level of 388mm.

Requiring a Maximum (Critical) Storage Capacity of 17.79 cubic metres.

The Outflow Surface Area for the Critical Storm Duration for the M100 Return is 153.00 square metres referenced to the Critical Water Level.

Half Drain Time for a 100 Year Return Critical Storm is 7.51 hours.

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