

Mate Geo-Technic Services

Report prepared by RC on Friday 3rd September 2021

"L'Apache" Westergate Street, Woodgate, CHICHESTER PO20 3SQ -- Planning Reference AL/50/21/PL

The Design Parameters for the Proposed Permeable Paving (Self Drain) Soakaway Structure (Perm-2) located adjacent to the front are as follows :-

The Soil Infiltration Rate for the Sides is 6.515×10^{-6} metres / second.

The Soil Infiltration Rate for the Base is 6.515×10^{-6} metres / second.

The Permeable Pavement Installation is 4.80 metres Long by 4.80 metres Wide and 0.20 metres in Depth.

With a Cover Depth of 0.13 metres.

Percentage Void Space of 30%.

Impermeable Area specified as 23 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 3.258×10^{-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.

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

The Highest Recorded Groundwater at the Location of the Proposed Permeable Structure is 8.898 metres at a depth of 0.792 metres Below Ground Level (BGL)

The Ground Level at the Location of the Proposed Permeable Structure is 9.790 metres.

The Soffit Level of the Proposed Permeable Structure is 9.660 metres.

The Foundation (Base) Level of the Proposed Permeable Structure is 9.460 metres

The Base of the Permeable Structure is 0.462 metres above the Highest Recorded Groundwater at it's the location. This meets Building Regulations.

Critical Water level at the Down-Gradient is 9.551 metres AOD.

Soffit Level at Down-Gradient is 9.560 metres AOD.

The Design Summary for the Proposed Permeable Paving (Self Drain) Soakaway Structure (Perm-2) located adjacent to the front are as follows :-

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

The Design requires storage of 0.97 cubic metres out of 1.38 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 1.80 hours.

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

Storm Duration	Factor Z1-5	M5 Return Rainfall	Factor Z2-100	M100 Return Rainfall	Inflow Cu Metres	Outflow Cu Metres	Internal Water Level	Required Storage	Soakaway Status
5 minutes	0.360	6.80	1.790	17.10	0.395	0.023	54	0.372	-OK-
10 minutes	0.510	9.70	1.910	25.90	0.597	0.045	80	0.552	-OK-
15 minutes	0.620	11.80	1.910	31.50	0.726	0.068	95	0.658	-OK-
30 minutes	0.790	15.00	1.990	41.80	0.963	0.135	120	0.828	-OK-
1 hour	1.000	19.00	2.030	54.00	1.244	0.270	141	0.974	-OK-
2 hours	1.216	23.10	2.010	65.00	1.498	0.540	139	0.958	-OK-
3 hours	1.364	25.90	2.010	72.90	1.680	0.811	126	0.870	-OK-
4 hours	1.495	28.40	1.970	78.30	1.805	1.081	105	0.724	-OK-
5 hours	1.593	30.30	1.970	83.50	1.923	1.351	83	0.572	-OK-
6 hours	1.670	31.70	1.970	87.50	2.016	1.621	57	0.395	-OK-
7 hours	1.745	33.20	1.930	89.60	2.064	1.891	25	0.173	-OK-
8 hours	1.805	34.30	1.930	92.70	2.135	2.162	empty	none	-OK-
9 hours	1.863	35.40	1.930	95.60	2.204	2.432	empty	none	-OK-
10 hours	1.915	36.40	1.930	98.30	2.265	2.702	empty	none	-OK-
11 hours	1.960	37.20	1.930	100.60	2.318	2.972	empty	none	-OK-
12 hours	2.005	38.10	1.890	100.80	2.322	3.242	empty	none	-OK-
14 hours	2.085	39.60	1.890	104.80	2.415	3.783	empty	none	-OK-
16 hours	2.155	40.90	1.890	108.30	2.496	4.323	empty	none	-OK-
18 hours	2.225	42.30	1.890	111.90	2.577	4.863	empty	none	-OK-
20 hours	2.295	43.60	1.855	113.20	2.609	5.404	empty	none	-OK-
22 hours	2.360	44.80	1.855	116.40	2.683	5.944	empty	none	-OK-
24 hours	2.430	46.20	1.855	119.90	2.763	6.485	empty	none	-OK-

Effective Volume of the Permeable Paving Structure Soakaway Installation for an M100 Return Period is 1.38 cubic metres.

Maximum Available (Effective) Outflow Surface Area at M100 Return is 23 square metres.

Maximum Allowable Pre-Flood Water Level for 100 Year Return (Structure Height) 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 0.97 cubic metres.

The Outflow Surface Area for the Critical Storm Duration for the M100 Return is 23 square metres.

Half Drain Time for a 100 Year Return Critical Storm is 1.80 hours.

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