

Mate Geo-Technic Services

Report prepared by RC on 15th May 2020

Cox's Farm, Lake Lane, Barnham, PO22 0AJ Planning Reference BN/23/19/HH

The Design Parameters for the Proposed Geocellular Structure Soakaway S/A #3, located in the Rear Garden, are as follows :-

Soil Infiltration Rate for the Sides is 5.906E-6 metres / second and the Soil Infiltration Rate for the Base is 5.906E-6 metres / second.

The Installation consists of a GeoCellular Structure of 3.00 metres Long by 3.00 metres Wide and 0.40 metres in Depth.

With a Cover Depth of 0.40 metres.

Percentage Void Space of 95%.

Impermeable Area specified as 58 square metres.

Using a Safety Factor of 2.0

The Design adopts a Factored Soil Infiltration Rate for the Sides of 2.953E-6 metres / second.

And a Factored Soil Infiltration Rate for the Base of 2.953E-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 300mm above the Installation Base.

The Base Area of the Installation is Included in the calculation.

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

The Highest Recorded Groundwater at the Location of the Proposed Soakaway is 9.323 metres at a depth of 0.852 metres Below Ground Level (BGL)

The Ground Level at the Location of the Proposed Soakaway is 10.175 metres

The Soffit Level of the Proposed Soakaway is 9.775 metres

The Invert Level of the Lowest Incoming Pipe on the Proposed Soakaway is 9.675 metres

The Base Level of the Proposed Soakaway is 9.375 metres

The Base of the Soakaway Structure is 0.052 metres above the Highest Recorded Groundwater at the location of the Soakaway. This meets Building Regulations.

The Design Summary for the Proposed Geocellular Structure Soakaway Installation S/A #3 is as follows :-

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

The Design requires storage of 2.45 cubic metres out of 2.56 cubic metres available.

Therefore Storage is Passed with a Critical Storm occurring at 6 hours.

And the Half Drain Time is OK within the Allowable 24 hours Period at 10.77 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	0.661	0.010	76	0.651	-OK-
10 minutes	0.510	9.70	1.220	16.60	0.960	0.019	110	0.941	-OK-
15 minutes	0.620	11.80	1.220	20.10	1.167	0.029	133	1.138	-OK-
30 minutes	0.790	15.00	1.240	26.10	1.511	0.057	170	1.454	-OK-
1 hour	1.000	19.00	1.250	33.20	1.928	0.115	212	1.814	-OK-
2 hours	1.216	23.10	1.240	40.10	2.326	0.230	245	2.097	-OK-
3 hours	1.364	25.90	1.240	45.00	2.609	0.344	265	2.265	-OK-
4 hours	1.495	28.40	1.220	48.50	2.814	0.459	275	2.355	-OK-
5 hours	1.593	30.30	1.220	51.70	2.998	0.574	284	2.424	-OK-
6 hours	1.670	31.70	1.220	54.20	3.143	0.689	287	2.454	-OK-
7 hours	1.745	33.20	1.203	55.80	3.239	0.804	285	2.435	-OK-
8 hours	1.805	34.30	1.203	57.80	3.350	0.919	284	2.432	-OK-
9 hours	1.863	35.40	1.203	59.60	3.458	1.033	284	2.424	-OK-
10 hours	1.915	36.40	1.203	61.30	3.554	1.148	281	2.406	-OK-
11 hours	1.960	37.20	1.203	62.70	3.638	1.263	278	2.375	-OK-
12 hours	2.005	38.10	1.190	63.50	3.681	1.378	269	2.303	-OK-
14 hours	2.085	39.60	1.190	66.00	3.828	1.607	260	2.221	-OK-
16 hours	2.155	40.90	1.190	68.20	3.956	1.837	248	2.119	-OK-
18 hours	2.225	42.30	1.190	70.40	4.085	2.067	236	2.018	-OK-
20 hours	2.295	43.60	1.180	72.00	4.178	2.296	220	1.882	-OK-
22 hours	2.360	44.80	1.180	74.10	4.296	2.526	207	1.771	-OK-
24 hours	2.430	46.20	1.180	76.30	4.424	2.756	195	1.668	-OK-

Effective Volume of the Geocellular Structure Soakaway Installation for an M10 Return Period is 2.56 cubic metres.

Maximum Available (Effective) Outflow Surface Area at M10 Return is 10.80 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 300mm.

For a 10 Year Return Period the Critical Storm occurs at 6 hours

With a Maximum Internal Structure Critical Water Level of 287mm.

Requiring a Maximum (Critical) Storage Capacity of 2.45 cubic metres.

The Outflow Surface Area for the Critical Storm Duration for the M10 Return is 10.72 square metres referenced to the Critical Water Level.

Half Drain Time for a 10 Year Return Critical Storm is 10.77 hours.

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