

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

The Design Parameters for the Proposed Geocellular Structure Soakaway Installation S/A #2 Located in the rear garden of Plot #2 are as follows :-

The Soil Infiltration Rate for the Sides is 7.262E-6 metres / second and the Soil Infiltration Rate for the Base is 7.262E-6 metres / second.

The Installation consists of a GeoCellular Structure of 4.00 metres Long by 4.00 metres Wide and 0.40 metres in Depth.

With a Cover Depth of 0.35 metres.

Percentage Void Space of 95%.

Impermeable Area specified as 81 square metres (the side and rear roof areas of Plot #2).

Using a Safety Factor of 2.0

The Design adopts a Factored Soil Infiltration Rate for the Sides of 3.631E-6 metres / second.

And a Factored Soil Infiltration Rate for the Base of 3.631E-6 metres / second.

Both the Side Areas and the Base Area are Included in the Calculations.

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.

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

The Highest Recorded Groundwater at the Location of the Proposed Soakaway is 7.328 metres at a depth of 0.796 metres Below Ground Level (BGL)

The Ground Level at the Location of the Proposed Soakaway is 8.124 metres

The Soffit Level of the Proposed Soakaway is 7.774 metres

The Invert Level of the Lowest Incoming Pipe on the Proposed Soakaway is 7.674 metres

The Base Level of the Proposed Soakaway is 7.374 metres

The Base of the Soakaway Structure is 0.046 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 #2 is as follows :-

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

The Design requires storage of 2.98 cubic metres out of 4.56 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 6.50 hours.

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

The Design requires storage of 5.58 cubic metres out of 6.08 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 11.28 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	0.923	0.020	59	0.903	-OK-
10 minutes	0.510	9.70	1.220	16.60	1.341	0.040	86	1.301	-OK-
15 minutes	0.620	11.80	1.220	20.10	1.630	0.060	103	1.570	-OK-
30 minutes	0.790	15.00	1.240	26.10	2.111	0.120	131	1.990	-OK-
1 hour	1.000	19.00	1.250	33.20	2.693	0.241	161	2.453	-OK-
2 hours	1.216	23.10	1.240	40.10	3.249	0.481	182	2.768	-OK-
3 hours	1.364	25.90	1.240	45.00	3.644	0.722	192	2.923	-OK-
4 hours	1.495	28.40	1.220	48.50	3.930	0.962	195	2.968	-OK-
5 hours	1.593	30.30	1.220	51.70	4.187	1.203	196	2.985	-OK-
6 hours	1.670	31.70	1.220	54.20	4.390	1.443	194	2.947	-OK-
7 hours	1.745	33.20	1.203	55.80	4.523	1.684	187	2.839	-OK-
8 hours	1.805	34.30	1.203	57.80	4.679	1.924	181	2.754	-OK-
9 hours	1.863	35.40	1.203	59.60	4.829	2.165	175	2.664	-OK-
10 hours	1.915	36.40	1.203	61.30	4.964	2.405	168	2.558	-OK-
11 hours	1.960	37.20	1.203	62.70	5.080	2.646	160	2.435	-OK-
12 hours	2.005	38.10	1.190	63.50	5.141	2.886	148	2.255	-OK-
14 hours	2.085	39.60	1.190	66.00	5.346	3.367	130	1.979	-OK-
16 hours	2.155	40.90	1.190	68.20	5.525	3.848	110	1.677	-OK-
18 hours	2.225	42.30	1.190	70.40	5.705	4.329	90	1.376	-OK-
20 hours	2.295	43.60	1.180	72.00	5.835	4.810	67	1.025	-OK-
22 hours	2.360	44.80	1.180	74.10	6.000	5.291	47	0.709	-OK-
24 hours	2.430	46.20	1.180	76.30	6.178	5.772	27	0.406	-OK-

Effective Volume of the Geocellular Structure Soakaway Installation for an M10 Return Period is 4.56 cubic metres.

Maximum Available (Effective) Outflow Surface Area at M10 Return is 18.40 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 5 hours.

With a Maximum Internal Structure Critical Water Level of 196mm.

Requiring a Maximum (Critical) Storage Capacity of 2.98 cubic metres.

The Outflow Surface Area for the Critical Storm Duration for the M10 Return is 17.57 square metres referenced to the Critical Water Level.

Half Drain Time for a 10 Year Return Critical Storm is 6.50 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	1.388	0.021	90	1.368	-OK-
10 minutes	0.510	9.70	1.910	25.90	2.099	0.042	135	2.057	-OK-
15 minutes	0.620	11.80	1.910	31.50	2.551	0.063	164	2.489	-OK-
30 minutes	0.790	15.00	1.990	41.80	3.387	0.125	215	3.262	-OK-
1 hour	1.000	19.00	2.030	54.00	4.374	0.251	271	4.123	-OK-
2 hours	1.216	23.10	2.010	65.00	5.266	0.502	313	4.764	-OK-
3 hours	1.364	25.90	2.010	72.90	5.907	0.753	339	5.154	-OK-
4 hours	1.495	28.40	1.970	78.30	6.346	1.004	351	5.342	-OK-
5 hours	1.593	30.30	1.970	83.50	6.762	1.255	362	5.507	-OK-
6 hours	1.670	31.70	1.970	87.50	7.088	1.506	367	5.583	-OK-
7 hours	1.745	33.20	1.930	89.60	7.256	1.757	362	5.500	-OK-
8 hours	1.805	34.30	1.930	92.70	7.506	2.008	362	5.498	-OK-
9 hours	1.863	35.40	1.930	95.60	7.747	2.259	361	5.488	-OK-
10 hours	1.915	36.40	1.930	98.30	7.963	2.510	359	5.454	-OK-
11 hours	1.960	37.20	1.930	100.60	8.150	2.761	355	5.390	-OK-
12 hours	2.005	38.10	1.890	100.80	8.165	3.012	339	5.153	-OK-
14 hours	2.085	39.60	1.890	104.80	8.491	3.514	327	4.977	-OK-
16 hours	2.155	40.90	1.890	108.30	8.776	4.016	313	4.760	-OK-
18 hours	2.225	42.30	1.890	111.90	9.061	4.518	299	4.543	-OK-
20 hours	2.295	43.60	1.855	113.20	9.173	5.019	273	4.153	-OK-
22 hours	2.360	44.80	1.855	116.40	9.432	5.521	257	3.911	-OK-
24 hours	2.430	46.20	1.855	119.90	9.712	6.023	243	3.689	-OK-

Effective Volume of the Geocellular Structure Soakaway Installation for an M100 Return Period is 6.08 cubic metres.

Maximum Available (Effective) Outflow Surface Area at M100 Return is 19.20 square metres referenced to the top of the GeoCell Installation.

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

For a 100 Year Return Period the Critical Storm occurs at 6 hours.

With a Maximum Internal Structure Critical Water Level of 367mm.

Requiring a Maximum (Critical) Storage Capacity of 5.58 cubic metres.

The Outflow Surface Area for the Critical Storm Duration for the M100 Return is 18.94 square metres referenced to the Critical Water Level.

Half Drain Time for a 100 Year Return Critical Storm is 11.28 hours.

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