

"Wayside" Yapton Road, Barnham, Bognor Regis PO22 0BA Planning Reference BN/23/21/HH

The Design Parameters for the Proposed Geocellular Structure Soakaway Installation S/A#1 located in the rear garden are as follows :-

The Soil Infiltration Rate for the Sides is 1.015E-5 metres / second.

The Soil Infiltration Rate for the Base is 1.015E-5 metres / second.

The Installation consists of a GeoCellular Structure of 5.00 metres Long by 2.00 metres Wide and 0.40 metres in Depth.

With a Cover Depth of 0.45 metres.

Percentage Void Space of 95%.

Impermeable Area specified as 52.2 square metres.

Using a Safety Factor of 2.0

The Design adopts a Factored Soil Infiltration Rate for the Sides of 5.075E-6 metres / second.

And a Factored Soil Infiltration Rate for the Base of 5.075E-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 8.172 metres at a depth of 1.034 metres Below Ground Level (BGL)

The Ground Level at the Location of the Proposed Soakaway is 9.206 metres.

The Soffit Level of the Proposed Soakaway is 8.756 metres.

The Invert Level of the Lowest Incoming Pipe on the Proposed Soakaway is 8.656 metres

The Base Level of the Proposed Soakaway is 8.356 metres

The Base of the Soakaway Structure is 0.184 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#1 is as follows :-

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

The Design requires storage of 1.69 cubic metres out of 2.85 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 4.10 hours.

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

The Design requires storage of 3.19 cubic metres out of 3.80 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 7.07 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	0.595	0.018	61	0.576	-OK-
10 minutes	0.510	9.70	1.220	16.60	0.864	0.037	87	0.827	-OK-
15 minutes	0.620	11.80	1.220	20.10	1.050	0.055	105	0.995	-OK-
30 minutes	0.790	15.00	1.240	26.10	1.360	0.111	132	1.250	-OK-
1 hour	1.000	19.00	1.250	33.20	1.736	0.221	159	1.515	-OK-
2 hours	1.216	23.10	1.240	40.10	2.094	0.442	174	1.652	-OK-
3 hours	1.364	25.90	1.240	45.00	2.348	0.663	177	1.685	-OK-
4 hours	1.495	28.40	1.220	48.50	2.533	0.884	174	1.648	-OK-
5 hours	1.593	30.30	1.220	51.70	2.699	1.105	168	1.593	-OK-
6 hours	1.670	31.70	1.220	54.20	2.829	1.326	158	1.503	-OK-
7 hours	1.745	33.20	1.203	55.80	2.915	1.547	144	1.367	-OK-
8 hours	1.805	34.30	1.203	57.80	3.015	1.769	131	1.247	-OK-
9 hours	1.863	35.40	1.203	59.60	3.112	1.990	118	1.122	-OK-
10 hours	1.915	36.40	1.203	61.30	3.199	2.211	104	0.988	-OK-
11 hours	1.960	37.20	1.203	62.70	3.274	2.432	89	0.842	-OK-
12 hours	2.005	38.10	1.190	63.50	3.313	2.653	69	0.660	-OK-
14 hours	2.085	39.60	1.190	66.00	3.445	3.095	37	0.350	-OK-
16 hours	2.155	40.90	1.190	68.20	3.561	3.537	2	0.024	-OK-
18 hours	2.225	42.30	1.190	70.40	3.676	3.979	empty	none	-OK-
20 hours	2.295	43.60	1.180	72.00	3.760	4.421	empty	none	-OK-
22 hours	2.360	44.80	1.180	74.10	3.867	4.863	empty	none	-OK-
24 hours	2.430	46.20	1.180	76.30	3.981	5.306	empty	none	-OK-

Effective Volume of the Geocellular Structure Soakaway Installation for an M10 Return Period is 2.85 cubic metres.

Maximum Available (Effective) Outflow Surface Area at M10 Return is 12.10 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 3 hours.

With a Maximum Internal Structure Critical Water Level of 177mm.

Requiring a Maximum (Critical) Storage Capacity of 1.69 cubic metres.

The Outflow Surface Area for the Critical Storm Duration for the M10 Return is 11.24 square metres referenced to the Critical Water Level.

Half Drain Time for a 10 Year Return Critical Storm is 4.10 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	0.895	0.019	92	0.875	-OK-
10 minutes	0.510	9.70	1.910	25.90	1.353	0.039	138	1.314	-OK-
15 minutes	0.620	11.80	1.910	31.50	1.644	0.058	167	1.586	-OK-
30 minutes	0.790	15.00	1.990	41.80	2.183	0.117	217	2.066	-OK-
1 hour	1.000	19.00	2.030	54.00	2.819	0.234	272	2.585	-OK-
2 hours	1.216	23.10	2.010	65.00	3.394	0.468	308	2.926	-OK-
3 hours	1.364	25.90	2.010	72.90	3.807	0.702	327	3.105	-OK-
4 hours	1.495	28.40	1.970	78.30	4.089	0.935	332	3.154	-OK-
5 hours	1.593	30.30	1.970	83.50	4.357	1.169	336	3.188	-OK-
6 hours	1.670	31.70	1.970	87.50	4.568	1.403	333	3.165	-OK-
7 hours	1.745	33.20	1.930	89.60	4.676	1.637	320	3.039	-OK-
8 hours	1.805	34.30	1.930	92.70	4.837	1.871	312	2.966	-OK-
9 hours	1.863	35.40	1.930	95.60	4.993	2.105	304	2.888	-OK-
10 hours	1.915	36.40	1.930	98.30	5.132	2.339	294	2.793	-OK-
11 hours	1.960	37.20	1.930	100.60	5.252	2.572	282	2.680	-OK-
12 hours	2.005	38.10	1.890	100.80	5.262	2.806	258	2.455	-OK-
14 hours	2.085	39.60	1.890	104.80	5.472	3.274	231	2.198	-OK-
16 hours	2.155	40.90	1.890	108.30	5.655	3.742	201	1.914	-OK-
18 hours	2.225	42.30	1.890	111.90	5.839	4.209	172	1.630	-OK-
20 hours	2.295	43.60	1.855	113.20	5.911	4.677	130	1.234	-OK-
22 hours	2.360	44.80	1.855	116.40	6.079	5.145	98	0.934	-OK-
24 hours	2.430	46.20	1.855	119.90	6.259	5.613	68	0.646	-OK-

Effective Volume of the Geocellular Structure Soakaway Installation for an M100 Return Period is 3.80 cubic metres.

Maximum Available (Effective) Outflow Surface Area at M100 Return is 12.80 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 5 hours.

With a Maximum Internal Structure Critical Water Level of 336mm.

Requiring a Maximum (Critical) Storage Capacity of 3.19 cubic metres.

The Outflow Surface Area for the Critical Storm Duration for the M100 Return is 12.35 square metres referenced to the Critical Water Level.

Half Drain Time for a 100 Year Return Critical Storm is 7.07 hours.

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