

Rainwater disposal to BRE Digest 365

Job No. 2386 Address: Gladwyn, The Street. East Preston Date: March 2020

Calculation of proposed soakaways added July 2020

Rainfall ratio 0.35 Rn index 8 Annual rainfall England SE & central S

Catchment areas	Length	Width	Area	Building uplift	Annual rainfall	England SE & central S
Roof 1	1	79	79	2014	2013	
Roof 2	1	31.6	32	2012	Average 1961-2010	772
Roof 3			0			
Roof 4			0			
Surface 1			0		Total 2014 m3	0
Surface 2			0		Expected m3	85
Surface 3			0		Drain slope 1in?	200
Total area			111		Roughness factor n	0.011

Duration D	Time	Z1	M5-D	M5	Z2	M10-D	Volume	drain rate	drain dia
mins	index	factor	mm	index	factor	mm	m3	l/sec	mm
5	1	0.357	7.13	1	1.20	8.58	0.95	3.16	89
10	2	0.507	10.13	2	1.22	12.37	1.37	2.28	79
15	3	0.617	12.33	2	1.23	15.16	1.68	1.86	73
30	4	0.787	15.73	3	1.24	19.51	2.16	1.2	62
60	5	1.000	20	4	1.24	24.8	2.74	0.76	52
120	6	1.223	24.47	4	1.24	30.34	3.36	0.47	43
240	7	1.497	29.93	5	1.22	36.53	4.04	0.28	36
360	8	1.690	33.8	6	1.21	40.85	4.52	0.21	32
600	9	1.947	38.93	6	1.19	46.46	5.14	0.14	28
1440	10	2.480	49.6	7	1.17	58.07	6.42	0.07	22

Try Soakaway	Length l	Depth	eff depth	vol fact	Voleff W
	5.5	1.8	1.2	0.95	6.27
Infiltration rate f	1.07E-06				

Solving for width

DurationD	lfd60	dfd60 W	Width m	Store vol	0.5 empty
5	0.002	0.000	0.15	1	19.02
10	0.004	0.001	0.22	1.44	27.08
15	0.006	0.001	0.27	1.76	32.89
30	0.013	0.002	0.34	2.26	41.67
60	0.025	0.005	0.43	2.86	51.97
120	0.051	0.009	0.53	3.47	62.17
240	0.102	0.019	0.63	4.13	72.77
360	0.153	0.028	0.69	4.57	79.68
600	0.255	0.046	0.77	5.1	87.73
1440	0.612	0.111	0.91	6.01	101.13

Wavin AquaCell Core R cells are 1x0.5x0.4 volume 0.2m3 33 cells needed

For 18x1x1.2 soakaway to be used thus 108 cells needed VoleffW 21.66

DurationD	inflow m3	Ofiw m3	ts50 hrs
5	0.95	0.00734	5.39
10	1.37	0.01468	7.77
15	1.68	0.02202	9.52
30	2.16	0.04404	12.25
60	2.74	0.08807	15.57
120	3.36	0.17614	19.05
240	4.04	0.35229	22.93
360	4.52	0.52843	25.65
600	5.14	0.88072	29.17
1440	6.42	2.11372	36.46
4320	19.26	6.34117	109.34

Tests

Rainwater disposal to BRE Digest 365

Job No. 2386 Address: Gladwyn, The Street. East Preston Date: March 2020

Test 1		Test 2		Test 3	
Pit West 1.8x1.5x1.8		Pit West 1.8x1.5x1.8		Pit West 1.8x1.5x1.8	
Time	Depth	Time	Depth	Time	Depth
0	600	0	600	0	600
60	760	60	730	60	705
120	860	120	805	120	780
180	945	180	880	180	840
240	1020	240	940	240	895
300	1090	300	985	300	925
360	1140	360	1030	360	1020
420	1190	420	1075	420	1060
480	1220	480	1120	440	1350
540	1250	1440	1400	1740	1400
1474	1470	3230	1500	4320	1510
1878	1500				

Inlet invert depth 600

Test 1	Size data	Test 2	Size data	Test 3	Size data
Vp75-25	1.62	Vp75-25	1.62	Vp75-25	1.62
Ap75-25	6.66	Ap75-25	6.66	Ap75-25	6.66
t75%	160	t75%	200	t75%	360
t25%	1878	t25%	3230	t25%	4140
f	2.36E-06	f	1.34E-06	f	1.07E-06

Test 1		Test 2		Test 3	
Pit East 1.8x1.5x1.8		Pit East 1.8x1.5x1.8		Pit East 1.8x1.5x1.8	
Time	Depth	Time	Depth	Time	Depth
0	600	0	600	0	600
60	750	60	730	60	690
120	830	120	800	120	775
180	945	180	820	180	820
240	960	240	930	240	895
300	1030	300	980	300	930
360	1170	360	1040	360	995
420	1260	420	1075	420	1025
480	1300	480	1115	1440	1325
540	1270	1440	1400	1740	1295
1474	1455	3250	1500	4320	1525
1950	1500				

Inlet invert depth 600

Test 1	Size data	Test 2	Size data	Test 3	Size data
Vp75-25	1.62	Vp75-25	1.62	Vp75-25	1.62
Ap75-25	6.66	Ap75-25	6.66	Ap75-25	6.66
t75%	232	t75%	240	t75%	250
t25%	1950	t25%	3230	t25%	4050
f	2.36E-06	f	1.36E-06	f	1.07E-06