

Qbar Calculation

24/02/2023 16:16

1 Orchardton Park- New Kitchen Extension

Extension Area: 21.9 m²
 0.00219 ha
 2.19E-05 km²

SAAR 912 mm Station: Dublin Airport
 SOIL TYPE 2 0.3 per Greater Dublin Strategic Drainage Study

Mean Annual Peak Flow (Permissible Outflow Rate)

$$QBAR = 0.583 * (SAAR)^{1.17*} (SOIL)^{2.17*} (AREA/50)$$

(per Greater Dublin Strategic Drainage Study))

QBAR = 0.00005 m³/s

QBAR = 0.05 l/s

TABLE 1

Attenuation Areas (Developed site):

	Area m ²	Permbly Co-eff	Net non Permeable Area m ²
		1	0.0
		0.7	0.0
		0.7	0.0
Building	21.9	1.0	21.9
Permeable			
Paved Areas		0.3	0.0
Impermeable		1.0	0.0
Grass Areas		0	0.0
TOTAL	21.9	-	21.9

0

TABLE 2: User to input site specific information

Dublin, Ave Annual Rain Fall = 760 mm x 20% climate change 912mm											
Maximum Rainfall (mm) over indicated duration, expected in the indicated return period											
Duration			Return Period (Years)								
			Ave:20&50 Assume 30								
Seconds			0.5	1	2	5	10	20	50	100	
1	min	60	0.0	0.0	0.0	1.7	2.0	2.4	2.8	3.1	3.5
2	min	120	0.0	0.0	0.0	3.0	3.5	4.2	4.8	5.3	6.1
5	min	300	0.0	0.0	0.0	5.3	6.3	7.6	8.7	9.7	11.1
10	min	600	0.0	0.0	0.0	7.6	9.0	11.0	12.6	14.2	16.4
15	min	900	4.5	5.7	6.5	9.2	11.4	14.0	16.2	18.3	21.0
30	min	1800	6.1	7.7	8.6	12.2	15.1	18.4	21.2	24.0	28.0
60	min	3600	8.0	10.2	11.3	15.7	19.3	23.0	26.5	30.0	35.0
2	hours	7200	10.8	13.4	15.0	20.1	24.0	29.0	32.5	36.0	42.0
4	hours	14400	14.8	18.1	20.0	26.0	31.0	36.0	40.5	45.0	51.0
6	hours	21600	17.8	21.8	24.0	31.0	37.0	43.0	47.5	52.0	60.0
12	hours	43200	23.1	28.0	31.0	39.0	46.0	53.0	59.0	65.0	73.0
24	hours	86400	29.0	34.0	38.0	48.0	56.0	64.0	71.0	78.0	88.0
48	hours	172800	36.0	43.0	46.0	58.0	68.0	77.0	84.5	92.0	103.0

0.5

0.4

MAX STORAGE REQUIRED = (m³)

Duration	Return Period (Years)						
	0.5	1	2	5	10	20	Ave:20&50
1 min	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 min	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 min	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10 min	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 min	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 min	0.0	0.1	0.1	0.1	0.1	0.1	0.1
60 min	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24 hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48 hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE 5: = Table 3 - Table 4

Duration	Return Period (Years)						
	0.5	1	2	5	10	20	Ave:20&50
1 min	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 min	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 min	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10 min	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 min	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 min	0.0	0.1	0.1	0.1	0.1	0.1	0.1
60 min	0.2	0.2	0.2	0.2	0.2	0.2	0.2
2 hours	0.4	0.4	0.4	0.4	0.4	0.4	0.4
4 hours	0.8	0.8	0.8	0.8	0.8	0.8	0.8
6 hours	1.2	1.2	1.2	1.2	1.2	1.2	1.2
12 hours	2.4	2.4	2.4	2.4	2.4	2.4	2.4
24 hours	4.7	4.7	4.7	4.7	4.7	4.7	4.7
48 hours	9.4	9.4	9.4	9.4	9.4	9.4	9.4

TABLE 4: = Time (secs) x 0.0005441274 (QBAR allowable discharge rate in m³/sec)

Duration	Return Period (Years)						
	0.5	1	2	5	10	20	Ave:20&50
1 min	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 min	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 min	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10 min	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 min	0.4	0.3	0.3	0.3	0.3	0.3	0.3
30 min	0.6	0.5	0.5	0.5	0.5	0.5	0.5
60 min	0.7	0.6	0.6	0.6	0.6	0.6	0.6
2 hours	0.9	0.8	0.8	0.8	0.8	0.8	0.8
4 hours	1.1	1.0	1.0	1.0	1.0	1.0	1.0
6 hours	1.3	1.1	1.1	1.1	1.1	1.1	1.1
12 hours	1.6	1.4	1.4	1.4	1.4	1.4	1.4
24 hours	1.9	1.7	1.7	1.7	1.7	1.7	1.7
48 hours	2.3	2.0	2.0	2.0	2.0	2.0	2.0

TABLE 3: = Table 2 x 21.9 (Net non permeable area m²)