Qbar Calculation

24/02/2023 16:26

1 Orchardton Park- Granny Flat

Extension Area: 77.203 m^2
0.00772 ha
7.72E-05 km^2

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 = 0.00019 m^3/s
QBAR = 0.19 l/s

TABLE 1

Attentuation Areas (Developed site):

	Area m^2	Permblty Co-eff	Net non Permeable Area m^2
		1	0.0
		0.7	0.0
		0.7	0.0
Building	77.203	1.0	77.2
Permeable			
Paved Areas		0.3	0.0
Impermeable		1.0	0.0
Grass Areas		0	0.0
TOTAL	77.203	-	77.2

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)								
		Seconds	0.5	1	2	5	10	20	Ave:20&50 Assume 30	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

TABLE 3: = Table 2 x 77.2 (Net non permeable area m2)

TOTAL WATER ON SITE (m^3)										
Duration			Return Period (Years)							
								Ave:20&50		
		Seconds	0.5	1	2	5	10	20	Assume 30	50	100
1	min	60	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.3
2	min	120	0.0	0.0	0.0	0.2	0.3	0.3	0.4	0.4	0.5
5	min	300	0.0	0.0	0.0	0.4	0.5	0.6	0.7	0.7	0.9
10	min	600	0.0	0.0	0.0	0.6	0.7	0.8	1.0	1.1	1.3
15	min	900	0.3	0.4	0.5	0.7	0.9	1.1	1.2	1.4	1.6
30	min	1800	0.5	0.6	0.7	0.9	1.2	1.4	1.6	1.9	2.2
60	min	3600	0.6	0.8	0.9	1.2	1.5	1.8	2.0	2.3	2.7
2	hours	7200	0.8	1.0	1.2	1.6	1.9	2.2	2.5	2.8	3.2
4	hours	14400	1.1	1.4	1.5	2.0	2.4	2.8	3.1	3.5	3.9
6	hours	21600	1.4	1.7	1.9	2.4	2.9	3.3	3.7	4.0	4.6
12	hours	43200	1.8	2.2	2.4	3.0	3.6	4.1	4.6	5.0	5.6
24	hours	86400	2.2	2.6	2.9	3.7	4.3	4.9	5.5	6.0	6.8
48	hours	172800	2.8	3.3	3.6	4.5	5.2	5.9	6.5	7.1	8.0

TABLE 4: = Time (secs) x 0.0001918185738 (QBAR allowable discharge rate in m3/sec)

ALLOWABLE RUN OFF m^3 OVER GIVEN PERIOD OF TIME										
Duration			Return Period (Years)							
								Ave:20&50		
		Seconds	0.5	1	2	5	10	20	Assume 30	50	100
1	min	60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	min	120	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	min	300	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
10	min	600	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
15	min	900	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
30	min	1800	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
60	min	3600	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
2	hours	7200	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
4	hours	14400	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
6	hours	21600	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
12	hours	43200	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
24	hours	86400	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6
48	hours	172800	33.1	33.1	33.1	33.1	33.1	33.1	33.1	33.1	33.1

TABLE 5: = Table 3 - Table 4

STORAGE REQUIRED m^3										
Duration			Return Period (Years)							
								Ave:20&50		
		Seconds	0.5	1	2	5	10	20	Assume 30	50	100
1	min	60	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.3
2	min	120	0.0	0.0	0.0	0.2	0.2	0.3	0.3	0.4	0.4
5	min	300	0.0	0.0	0.0	0.4	0.4	0.5	0.6	0.7	0.8
10	min	600	0.0	0.0	0.0	0.5	0.6	0.7	0.9	1.0	1.2
15	min	900	0.2	0.3	0.3	0.5	0.7	0.9	1.1	1.2	1.4
30	min	1800	0.1	0.2	0.3	0.6	0.8	1.1	1.3	1.5	1.8
60	min	3600	0.0	0.1	0.2	0.5	0.8	1.1	1.4	1.6	2.0
2	hours	7200	0.0	0.0	0.0	0.2	0.5	0.9	1.1	1.4	1.9
4	hours	14400	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.7	1.2
6	hours	21600	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
12	hours	43200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	hours	86400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	hours	172800	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MAX STORAGE REQUIRED = (m^3)	**1.4**	**2.0**