

## Qbar Calculation

22/12/2022 11:27

### Site at Bluebell Avenue, Bluebell Industrial Estate

Site Area:  m<sup>2</sup>  
 0.04245 ha  
 0.00042 km<sup>2</sup>

SAAR  
 SOIL TYPE 2

mm

Station: Dublin Airport  
 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 = 0.00105 m<sup>3</sup>/s

QBAR = 1.05 l/s

**TABLE 1**

**Attenuation Areas (Developed site):**

	Area m <sup>2</sup>	Permbly Co-eff	Net non Permeable Area m <sup>2</sup>
		1	0.0
		0.7	0.0
		0.7	0.0
Building	324.381	1.0	324.4
Permeable			
Paved Areas	334	0.3	100.1
Impermeable		1.0	0.0
Grass Areas		0	0.0
<b>TOTAL</b>	<b>658.141</b>	<b>-</b>	<b>424.5</b>

0

**TABLE 2: User to input site specific information**

Duration		Return Period (Years)												
Seconds		Ave:20&50							Assume 30		50		100	
		0.5	1	2	5	10	20	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 424.5 (Net non permeable area m2)

Duration			TOTAL WATER ON SITE (m <sup>3</sup> )								
			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	0.7	0.8	1.0	1.2	1.3	1.5
2	min	120	0.0	0.0	0.0	1.3	1.5	1.8	2.0	2.2	2.6
5	min	300	0.0	0.0	0.0	2.2	2.7	3.2	3.7	4.1	4.7
10	min	600	0.0	0.0	0.0	3.2	3.8	4.7	5.3	6.0	7.0
15	min	900	1.9	2.4	2.8	3.9	4.8	5.9	6.9	7.8	8.9
30	min	1800	2.6	3.3	3.7	5.2	6.4	7.8	9.0	10.2	11.9
60	min	3600	3.4	4.3	4.8	6.7	8.2	9.8	11.2	12.7	14.9
2	hours	7200	4.6	5.7	6.4	8.5	10.2	12.3	13.8	15.3	17.8
4	hours	14400	6.3	7.7	8.5	11.0	13.2	15.3	17.2	19.1	21.6
6	hours	21600	7.6	9.3	10.2	13.2	15.7	18.3	20.2	22.1	25.5
12	hours	43200	9.8	11.9	13.2	16.6	19.5	22.5	25.0	27.6	31.0
24	hours	86400	12.3	14.4	16.1	20.4	23.8	27.2	30.1	33.1	37.4
48	hours	172800	15.3	18.3	19.5	24.6	28.9	32.7	35.9	39.1	43.7

**TABLE 4:** = Time (secs) x 0.0010547127 (QBAR allowable discharge rate in m3/sec)

Duration			ALLOWABLE RUN OFF m <sup>3</sup> OVER GIVEN PERIOD OF TIME								
			Return Period (Years)							Ave:20&50	
Seconds			0.5	1	2	5	10	20	Assume 30	50	100
1	min	60	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
2	min	120	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
5	min	300	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
10	min	600	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
15	min	900	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
30	min	1800	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
60	min	3600	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
2	hours	7200	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
4	hours	14400	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2
6	hours	21600	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8
12	hours	43200	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6	45.6
24	hours	86400	91.1	91.1	91.1	91.1	91.1	91.1	91.1	91.1	91.1
48	hours	172800	182.3	182.3	182.3	182.3	182.3	182.3	182.3	182.3	182.3

**TABLE 5:** = Table 3 - Table 4

Duration			STORAGE REQUIRED m <sup>3</sup>								
			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	0.7	0.8	1.0	1.1	1.3	1.4
2	min	120	0.0	0.0	0.0	1.1	1.4	1.7	1.9	2.1	2.5
5	min	300	0.0	0.0	0.0	1.9	2.4	2.9	3.4	3.8	4.4
10	min	600	0.0	0.0	0.0	2.8	3.2	4.0	4.7	5.4	6.3
15	min	900	1.0	1.5	1.8	3.0	3.9	5.0	5.9	6.8	8.0
30	min	1800	0.7	1.4	1.8	3.3	4.5	5.9	7.1	8.3	10.0
60	min	3600	0.0	0.5	1.0	2.9	4.4	6.0	7.5	8.9	11.1
2	hours	7200	0.0	0.0	0.0	0.9	2.6	4.7	6.2	7.7	10.2
4	hours	14400	0.0	0.0	0.0	0.0	0.0	0.1	2.0	3.9	6.5
6	hours	21600	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7
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<sup>3</sup>)

7.5

11.1

