Surface water BRE 365 Drainage Calculations

Applicant :   **Nan Wang**

Development :
For new front & rear extension and associated works @ 45 Culmore Road , Palmerstown , Dublin 20

Date of test :   **1-4-2022**

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Impereable area of new extension & immediate surround : 60m2
Soil Infiltration rate 0.31 *10(to the power of 5)

Soakaway Design

refer to bre digest 365 in respect of design of soakaway

design soakaway with contributing area 60m2 (Additional extension contributing area **only**)

Soil Infiltration rate 0.31 *10(to the power of 5)

Assume soakaway with plan dimensions 3.0* 3.0m with 650mm effective depth

The internal surface area of soakaway to 50% effective depth excluding base is 3.9m2

Effective volume of proposed soakaway (allowing for 30% free volume) = 2.04m3

Location of soakaway : Scotland & Ireland

Return period of 10 years
r = 0.42

Duration	m5 rainfall mm	growth factor z2	10 year rainfall mm	inflow m3	Outflow m3	storage req m3
5mins	7.6	1.18	9	0.54	0.003	0.537
10mins	10.6mm	1.19	12.61	0.7566	0.007	0.7496
15mins	12.8mm	1.2	15.3	0.918	0.01	0.908
30mins	16.2mm	1.2	19.4mm	1.164	0.021	1.143
1 hour	20.0mm	1.19	23.8mm	1.428	0.043	1.385
2 hours	24.0mm	1.18	28.4mm	1.704	0.087	1.617
4 hours	28.4mm	1.18	33.5mm	2.01	0.174	1.836
6 hours	31.4mm	1.18	37.0mm	2.22	0.261	1.959
10hrs	34.8mm	1.18	40.2mm	2.412	0.435	1.977
24hrs	43.2mm	1.17	50.4mm	3.024	1.044	1.98

Maximum storage required 1.98m3

*Hence a soakaway of 2*2*1.3m effective depth and containing 30% free volume should be satisfactory*

The soakaway shall be constructed strictly in accordance with the requirements of bre digest 365 .

An inspection well shall be constructed in the soakaway . A Geotextile membrane shall be fitted around the sides and top of the granular fill in the soakaway .

The soakaway shall not adversely affect structures of buildings , sewers , boundary walls and this to be checked by a structural engineer on site during soakaway construction .