

Surface water Drainage Calculations --Dwelling 1A

Applicant : Gary & Alannah Anderson

Development :

We Gary and Alannah Anderson are applying for full planning permission , for demolition of side garage and building 2 new two storey dwelling houses on site

Site address : 1 Watermeadow Drive , Old Bawn , Tallaght , Dublin 24, D24NY7R

Date of test : 18/10/2020



BDCS Ltd
Consulting Building Surveyors
Lower Friarstown , Bohernabreena
Dublin 24
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Soakaway Design

refer to bre digest 365 in respect of design of soakaway

design soakaway with contributing impermeable area 99m² (dwelling 1A, all external driveways & patio and paths are water permeable)

Soil Infiltration rate 0.77 *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	0.89	0.009	0.881
10mins	10.6mm	1.19	12.61	1.24	0.018	1.222
15mins	12.8mm	1.2	15.3	1.51	0.027	1.483
30mins	16.2mm	1.2	19.4mm	1.92	0.054	1.866
1 hour	20.0mm	1.19	23.8mm	2.35	0.108	2.242
2 hours	24.0mm	1.18	28.4mm	2.81	0.216	2.594
4 hours	28.4mm	1.18	33.5mm	3.31	0.432	2.878
6 hours	31.4mm	1.18	37.0mm	3.66	0.648	3.012
10hrs	34.8mm	1.18	40.2mm	3.97	1.08	2.89
24hrs	43.2mm	1.17	50.4mm	4.98	2.59	2.39

Maximum storage required 3.01m³

Hence a soakaway of 2.4*2.4*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 be located where indicated on the enclosed site layout plan with the application . **The soakaway shall not adversely affect structures of buildings , sewers , boundary walls and this to be checked & Designed by structural engineer on site during soakaway construction .**

Surface water Drainage Calculations --Dwelling 1B

Applicant : Gary & Alannah Anderson

Development :

We Gary and Alannah Anderson are applying for full planning permission , for demolition of side garage and building 2 new two storey dwelling houses on site

Site address : 1 Watermeadow Drive , Old Bawn , Tallaght , Dublin 24, D24NY7R

Date of test : 18/10/2020



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Soakaway Design

refer to bre digest 365 in respect of design of soakaway

design soakaway with contributing impermeable area 153m² (dwelling 1B, all external driveways & patio and paths are water permeable)

Soil Infiltration rate 0.79*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 z ²	10 year rainfall mm	inflow m ³	Outflow m ³	storage req m ³
5mins	7.6	1.18	9	1.377	0.0090	1.368
10mins	10.6mm	1.19	12.61	1.929	0.0184	1.911
15mins	12.8mm	1.2	15.3	2.341	0.0277	2.313
30mins	16.2mm	1.2	19.4mm	2.968	0.0554	2.913
1 hour	20.0mm	1.19	23.8mm	3.641	0.1109	3.530
2 hours	24.0mm	1.18	28.4mm	4.345	0.2218	4.123
4 hours	28.4mm	1.18	33.5mm	5.125	0.4436	4.681
6 hours	31.4mm	1.18	37.0mm	5.661	0.6654	4.996
10hrs	34.8mm	1.18	40.2mm	6.151	1.1091	5.042
24hrs	43.2mm	1.17	50.4mm	7.711	2.6610	5.050

Maximum storage required 5.05m³

Hence a soakaway of 2.4*2.4*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 be located where indicated on the enclosed site layout plan with the application . **The soakaway shall not adversely affect structures of buildings , sewers , boundary walls and this to be checked & Designed by structural engineer on site during soakaway construction .**