

Soil Infiltration Test for Design of Soakaway

At

**Cnoc Mhuire, Friarstown, Bohernabreena Co. Dublin.
D24 W732**

Prepared by

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Report on Soil Infiltration Test

Introduction

To manage the surface water from the development it is proposed to construct Soakaways in accordance with BRE Digest365 As part of this, the infiltration capacity of the soil was assessed. Dr. Eugene Bolton of Trinity Green Environmental Consultants was commissioned to carry out soil Infiltration Tests in accordance with BRE Digest365 to establish the suitability of the site for disposal of water.

1.0 Visual assessment of Site

The site is located in a Rural setting where there are adjoining sites and dwellings. The landscape slopes to Northwest but area for site of soakaway is flat. Topsoil has been removed from the rear of the site where the soakaway is to be located. There is no vegetation on the site or in adjoining area that would indicate poor soakage.

2.0 Sub-soil profile

A Site characterisation was completed closer to front of site where there was in excess of 2.7m of overburden. However water was present at 2.7m bgl. At the location of the test the subsoil was shale that was relatively fractured down to about 1.5m. At the base of the pit the rock was much harder and this was taken as the maximum depth of the soakaway.

3.0 Infiltration Tests

The Infiltration rate, generally expressed as metres per second, is the volume of water that enters the soil over a unit area and unit time. In order to obtain this measurement a pit is excavated and filled with water. The fall in the level of the water is recorded over time. The test pit had dimensions

Length 1.8m
Width 0.4m
Depth 1.5m

The base of the pit was filled with water to a depth of 600mm and the drop in the water level was followed over time

4.0 Results

The time required for the level to fall from 75% full to 25% full (ie 50% drop) – from a water depth of 0.45m to a water depth of 0.15m is estimated to be 8min.

Table 1 – Time taken for water level to fall

Elapsed Time (Mins)	Depth of Water (mm)
0	600
1	520
3	440
5	390
7	300
9	220
11	150

Infiltration rate (f) = Volume of water used/unit exposed area /unit time

$$\begin{aligned}\text{Volume} &= \text{pit length (m)} \times \text{Width (m)} \times \text{Drop in water level (m)} \\ &= 1.8 \times 0.4 \times 0.3 \\ &= 0.216\text{m}^3\end{aligned}$$

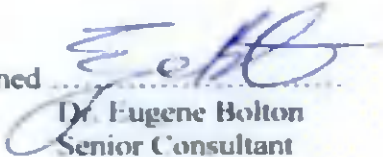
$$\begin{aligned}\text{Exposed area} &= (\text{Length} \times \text{Half the effective height} \times 2) + (\text{Width} \times \text{Half the effective height} \times 2) + \text{Base area} \\ &= (1.8 \times 0.3 \times 2) + (0.4 \times 0.3 \times 2) + (1.8 \times 0.4) \\ &= 2.04\text{m}^2\end{aligned}$$

Time = 8min

$$\begin{aligned}\text{Infiltration rate (f)} &= 0.216/2.04/8 \\ &= 1.3\text{E-}02 \text{ m/min} \\ \mathbf{f} &= \mathbf{2.2\text{E-}04 \text{ m/sec}}\end{aligned}$$

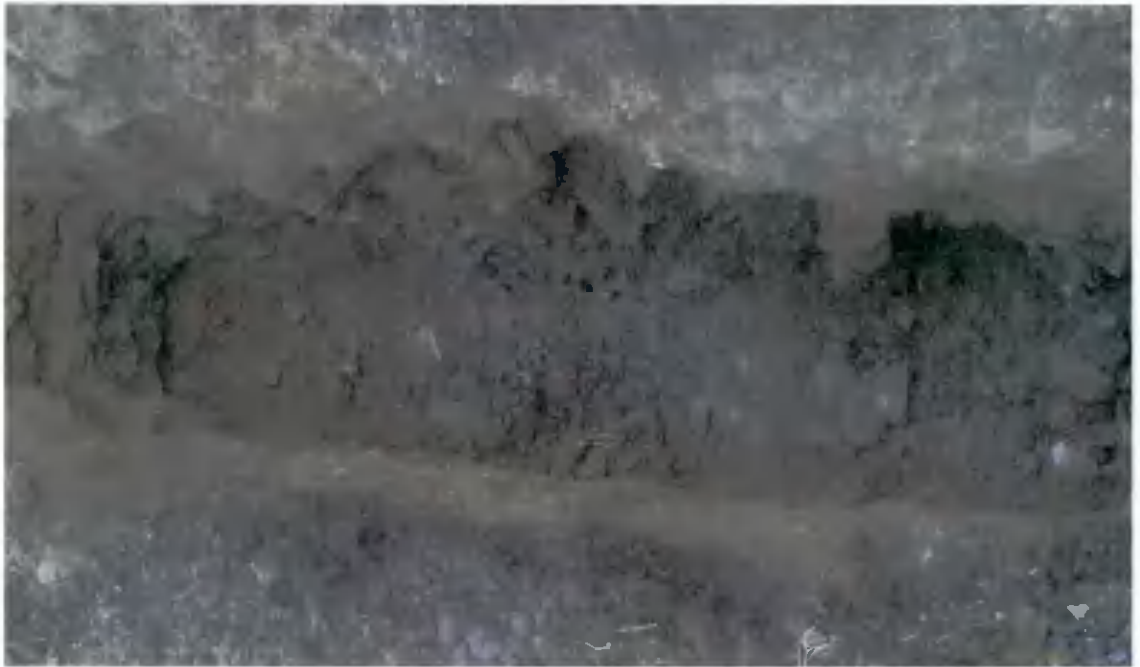
5.0 Conclusions

From the above observation it is concluded that the soakage is rapid and will allow infiltration of the stormwater.

Signed 
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Photo

Trial Pit before water added – Depth 1.5m



Excavated material



Pit during test



