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Soil Infiltration Test for Design of Soakaway

At

Rathfarnham, Co. Dublin D16 Y7R0

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 an urban setting where dwellings are located in relatively large sites and where the landscape is undulating. The site itself is relatively flat with a slight slope from rear to front. it is a mature site so there is no vegetation on the site or in adjoining grounds that would indicate poor soakage. The site is dry on the day of the tests.

2.0 Sub-soil profile

A test pit was excavated to 2.4mbgl. There is a layer of topsoil to 300mm bgl. The subsoil is a Gravely CLAY with gravel content higher to the front of the site. no evidence of a watertable was encountered.

4.0 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 new 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 1.3m

Width 0.3m

Depth 1.4m

The base of the pit was filled with water to a depth of 1000mm and the drop in the water level was followed over time

5.0 Results

The time required for the level to fall from 75% full to 25% full (ie 50% drop) – from a water depth of 0.75m to a water depth of 0.25m is estimated to be 184min.

Table 1 – Time taken for water level to fall

Elapsed Time (Mins)	Depth of Water (mm)
0	1000
3	940
7	860
20	740
33	680
45	620
58	580
78	530
97	480
130	400
168	310
201	250

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

$$\begin{aligned}\text{Volume} &= \text{pit length (m)} \times \text{Width (m)} \times \text{Drop in water level (m)} \\ &= 1.3 \times 0.3 \times 0.5 \\ &= 0.195\text{m}^3\end{aligned}$$

$$\begin{aligned}\text{Exposed area} &= (\text{Length} \times \text{Half the effective height} \times 2) + (\text{Width} \times \text{Half the effective height} \times 2) + \text{Base area} \\ &= (1.3 \times 0.5 \times 2) + (0.3 \times 0.5 \times 2) + (1.3 \times 0.3) \\ &= 1.99\text{m}^2\end{aligned}$$

$$\text{Time} = 184\text{min}$$

$$\text{Infiltration rate (f)} = 0.195/1.99/184$$

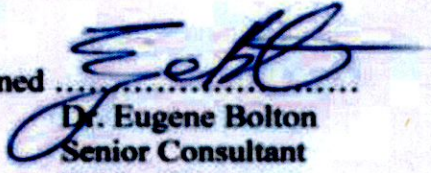
$$= 5.3\text{E-}04 \text{ m/min}$$

$$\mathbf{f = 8.8\text{E-}06 \text{ m/sec}}$$

6.0 *Conclusions*

From the above observation it is concluded that the soakage is good

Signed

A handwritten signature in black ink, appearing to read 'E. Bolton', written over a dotted line.

**Dr. Eugene Bolton
Senior Consultant
Trinity Green**

04/04/2022

Photo

Trial Pit – Depth 2.4m



Test Pit before water added – Depth 1.4m



Pit during test

