CONSULTING ENGINEERS

Engineering Report

at

69 Ballyroan Crescent, Rathfarnham

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Document Control

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1.0 Introduction

The proposed extension to the existing house is located to the rear of the existing property at 69 Ballyroan Crescent, Rathfarnham, Dublin 14.

This report comprises of design proposals for the disposal of surface water from the rear extension along with comments on the existing foul and water connections.

2.0 Existing Drainage

An existing private shared sewer is located at the rear of the property.

The new drainage to the extension will be connected to the existing foul sewer.

3.0 Proposed Surface Water

It is proposed that a soak pit will be constructed which will be in the rear garden which will take the run off from the roof of the rear extension.

All surface water pipework within the development site has been designed in accordance with the relevant standards so as to ensure the adequacy of capacities and gradients.

Please refer to Appendix A for the soak pit designs and Appendix B for the infiltration test results and photographs.

4.0 Water Connection

The existing property is served by a watermain from Ballyroan Crescent.

We are not proposing any changes to this connection.

Appendix A: Surface Water Calculations

Soakaway A Design

Assumed values for a rectangular soakaway
length (L) = 3.5 m
breadth (D)= 3.5 m
thickness (W) = W m

Calculate the design width of the soakaway (W):

Accumulative impermeable area (A) = 148.75 m^2

Inflow (I) = The inflow from the impermeable area drained to the soakaway
$I = A \times R$,where
A = Accumulative impermeable area
R = The total rainfall in a design storm for a specific duration

Outflow (O) = The outflow infiltrating into the soil during rainfall
$O = a_{sa} \times f \times d$,where
a_{sa} = The internal surface area of the Soakaway to 50% effective depth :this excludes the base
f = The soil infiltration rate determined in a trial pit
d = The storm duration

a_{sa} = $2 \times (L + W) \times (D/2)$
= 12.25 + 4 W
f = 3.68E-06 m/s

Assume Granular material having 30% free volume shall be used to fill the soakaway

Storage (S) = 30% of the effective volume of soakaway, and

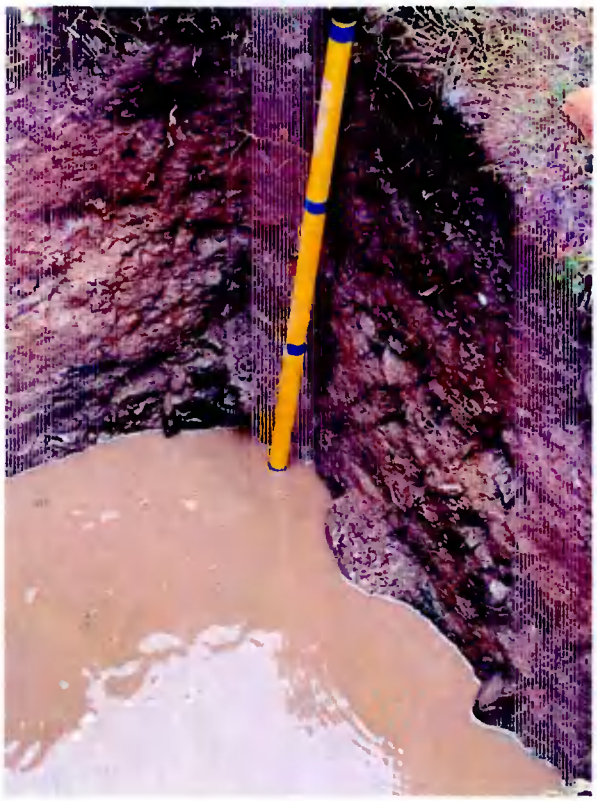
Storage (S) = The required storage in the soakaway
$S = I - O$

10 year storm

Duration minutes	Rainfall mm	Inflow m^3	Outflow m^3	Storage m^3	W m
15	11.9	1.77013	0.01 + 0.00 W	11.03 W	0.159
30	15.5	2.30563	0.02 + 0.01 W	11.03 W	0.207
60	20	2.975	0.05 + 0.02 W	11.03 W	0.265
120	24.4	3.6295	0.10 + 0.04 W	11.03 W	0.319
240	30.9	4.59638	0.19 + 0.08 W	11.03 W	0.397
360	36.6	5.44425	0.29 + 0.12 W	11.03 W	0.463
720	45.7	6.79788	0.57 + 0.24 W	11.03 W	0.553
1440	55.1	8.19613	1.14 + 0.48 W	11.03 W	0.613
2880	65.8	9.78775	2.29 + 0.95 W	11.03 W	0.626

Therefore construct a plan area of 12.25m^2 x 0.40 m thick

Appendix B: Infiltration Test



Infiltration Test

Trial Pit Dimensions:

Length =	1 m
Width =	1 m
Depth =	1 m
Effective Depth =	1 m

Volume Outflowing between 75% and 25% effective depth:

V_{p75} = 0.5 m^3

Mean Surface Area through which outflow occurs:
(pit sides to 50% effective depth and pit base)

a_{p50} = 3 m^2

Time for outflow between 75% and 25% effective depth:

t_{p75-25} = 755 minutes

Soil infiltration rate:

f = 3.67918E-06

Infiltration calculation