



McK
CONSULTING

UNIT 6 FARBILL HOUSE, ATHLONE RD,
KINNEGAD, CO. WESTMEATH.

(044) 93 10287

info@mckc.ie

24th August 2022

Our Ref: 201-167

South Dublin County Council
Planning Department
County Hall,
Tallaght,
Dublin 24,
D24 A3XC

Land Use Planning & Transportation
- 8 SEP 2022
South Dublin County Council

Planning Compliance

SD22B/0075

Planning Reference Number: SD22B/0075

Re: Planning Application @ Hillview, Athgoe Road, Newcastle, Co. Dublin, D22 N278.

Applicant: Paul Begley

Dear Sir/Madam,

In the above regard, please find attached the prescribed documents in relation to condition number 2 of the granted planning application reference number *SD22B/0075*.

- 2 Number copies of Revised Site Layout Drawing showing soakaway details.
(Drawing number 201-167-12-P1)
- 2 Number copies of BRE soakaway design report.

If you require anything further, please do not hesitate to contact the undersigned.

Yours sincerely,

Daniel McKeogh
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Our Ref: 201-167

Soakaway Design

Property Address: **Hillview, Athgoe Road, Newcastle, Co. Dublin, D22 N278**

Report by: **McK Consulting**

Report Author: **Billy Murtagh**

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1.0 Introduction

1.1 Background

A planning application was lodged to South Dublin County Council for the construction of a new garage at Hillview, Athgoe Road, Newcastle, Co. Dublin, D22 N278.

The applicant's name is Paul Begley.

This report is the design calculations for the proposed on-site soakpit.

2.0 Discussion

For the development, BRE Digest 365 soakaway testing has been carried out at the site.

Below are record photographs of the test hole at the site for the purposes of the BRE Digest 365 soakaway testing.

Figure 1-Test Hole Empty





Figure 2-Test Hole During Testing

3.0 Method of Investigation

3.1 *BRE Digest 365 soakaway testing*

Soakaway testing was carried out at the site in accordance with the requirements of BRE Digest 365.

4.0 Investigation Findings

4.1 Soakaway Testing Findings

The testing was carried out on the 12th of July 2022.

The ground conditions encountered are suitable for the construction of a soakaway at the site.

Times for the test hole to empty from 75% full to 25% full:

Test Iteration 1	44 minutes
Test Iteration 2	50 minutes
Test Iteration 3	57 minutes

The testing was carried out, and water table was not encountered.

5.0 Conclusion

5.1 Calculations:

Based on the testing results, with a garage roof area of 98m² and allowing for a 20% increase in rainfall, it is proposed to install a 2.0m long x 2.0m wide x 2.0m deep soakaway below the invert of the incoming pipe.

We have attached the detailed calculations in the appendix below.

This report is for the information of the addressee only and may not be used by any third parties without the prior written consent of this company.

Signed:

Date: 24/08/2022

Prepared by: Billy Murtagh (BE CEng MIEI)

McK Consulting

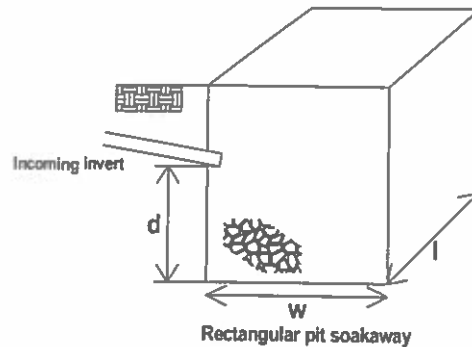
Unit 6 Farbill House, Athlone Road, Kinnegad, Co. Westmeath

(Ph) 0449310287

Email: info@mckc.ie

6.0 Appendices

APPENDIX CALCULATIONS



Soil infiltration rate (BRE digest 365)

;;; Length of trial pit;	$l_{\text{trial}} = 1000 \text{ mm};$	Width of trial pit;	$b_{\text{trial}} = 1000 \text{ mm}$
Depth of trial pit (below invert);	$d_{\text{trial}} = 1000 \text{ mm};$	Free volume (if fill used);	$V_{\text{trial}} = 100 \text{ %};$
75% depth of pit;	$d_{75} = (d_{\text{trial}} \times 0.75) = 750.00 \text{ mm}$		
50% depth of pit;	$d_{50} = (d_{\text{trial}} \times 0.50) = 500.00 \text{ mm}$		
25% depth of pit;	$d_{25} = (d_{\text{trial}} \times 0.25) = 250.00 \text{ mm}$		
;;; Test 1 - time to fall from 75% depth to 25% depth;		T1 =	126 min
Test 2 - time to fall from 75% depth to 25% depth;		T2 =	135 min
Test 3 - time to fall from 75% depth to 25% depth;		T3 =	143 min
Longest time to fall from 75% depth to 25% depth;		$t_g = \max(T1, T2, T3) =$	143 min
Storage volume from 75% to 25% depth;		$V_{p75_25} = (l_{\text{trial}} \times b_{\text{trial}} \times (d_{75} - d_{25})) \times V_{\text{trial}} =$	
0.50 m³			
Internal surface area to 50% depth;		$a_{p50} = ((l_{\text{trial}} \times b_{\text{trial}}) + (l_{\text{trial}} + b_{\text{trial}}) \times 2 \times d_{50}) =$	
3.00 m²			
Surface area of soakaway to 50% storage depth;		$A_{s50} = 2 \times (l_{\text{trial}} + b_{\text{trial}}) \times d_{\text{trial}} / 2 =$	2.000 m ²
Soil infiltration rate;		$f = V_{p75_25} / (a_{p50} \times t_g) =$	$19.4 \times 10^{-6} \text{ m/s}$

Rectangular Pit Design

;;; Pit length;	$l = 2000 \text{ mm};$	Pit width;	$w = 2000 \text{ mm}$
Pit depth below invert;	$d = 2000 \text{ mm};$	Free volume;	$V_{\text{free}} = 30.0 \text{ %}$
;;; Location of soakaway;	Ireland;	Return period;	50 years
Ratio of 60 minute to 2 day rainfalls of 5 year return period (BRE digest 365 - fig 1);		$r =$	0.30
;; Impermeable area;	$A = 98.0 \text{ m}^2;$	Soil infiltration rate;	$f = 0.0000194 \text{ m/s}$
Surface area of soakaway to 50% storage depth			
	$A_{s50} = 2 \times (l + w) \times d / 2 =$		8.000 m ²
Outflow factor;	$AF = A_{s50} \times f =$		$155. \times 10^{-6} \text{ m}^3/\text{s}$

M5 rainfalls are calculated from table 1 BRE digest 365 using Factor Z1

Duration	M5 rainfalls	Growth factor Z2;	50 year rainfall;	Inflow	Outflow	Storage required
5 mins	6.8 mm	1.65	11.2 mm	0.7 m ³	0.0 m ³	0.7 m ³
10 mins	9.8 mm	1.69	16.5 mm	1.1 m ³	0.1 m ³	1.0 m ³
15 mins	11.8 mm	1.69	20.0 mm	1.3 m ³	0.1 m ³	1.2 m ³
30 mins	15.4 mm	1.70	26.1 mm	1.7 m ³	0.3 m ³	1.4 m ³
1 hour	20.0 mm	1.66	33.2 mm	2.2 m ³	0.6 m ³	1.6 m ³
2 hours	25.0 mm	1.64	41.0 mm	2.7 m ³	1.1 m ³	1.5 m ³
4 hours	31.4 mm	1.60	50.3 mm	3.3 m ³	2.2 m ³	1.0 m ³
6 hours	35.6 mm	1.58	56.3 mm	3.7 m ³	3.4 m ³	0.3 m ³
10 hours	42.4 mm	1.55	65.7 mm	4.3 m ³	5.6 m ³	-1.3 m ³
24 hours	56.8 mm	1.50	85.3 mm	5.5 m ³	13.4 m ³	-7.9 m ³

Required storage volume; $S_{reqd} = 1.9 \text{ m}^3$

Soakaway storage volume; $S_{act} = l \times d \times w \times V_{free} = 2.4 \text{ m}^3$

Soakaway storage volume- OK

Time for emptying soakaway to half volume;

$$T_{s50} = S_{reqd} \times 0.5 / (A_{s50} \times f) = 1 \text{ hr } 25 \text{ min } 43 \text{ s}$$

Soakaway discharge time - OK