



**PercolationTests.ie**  
Planning Assessments & Land Surveys

Tel: 087 6636 757    Email: [percolationtests@gmail.com](mailto:percolationtests@gmail.com)    Web: [www.percolationtests.ie](http://www.percolationtests.ie)

# **BRE Digest 365 Report.**

Prepared on behalf of:

**c/o SHD Consulting Engineers**

At:

**Proposed dwelling @ Killakee  
Green,  
Firhouse,  
Dublin**



# PercolationTests.ie

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## **Scope of Report.**

The findings of this report are the result of an on-site infiltration test. Interpretations and conclusions included in the report are based on knowledge of the ground conditions following detailed investigations, as well as the regional soils, subsoils and bedrock geology, and the experience of the author. David Ryan has prepared this report in line with the best current practice and with all reasonable skill, care and diligence in consideration of the limits imposed by the survey techniques used and resources devoted to it by agreement with the client.

David Ryan accepts no responsibility for any matters arising if any recommendations contained in this document are not carried out, or are partially carried out, without further advice being obtained from David Ryan.

**Cillron Limited**

Newtownmoyaghy, Kilcock, Co. Kildare.  
www.percolationtests.ie  
Tel: 087 6636757

**BRE Digest 365 Test**

Revision: **1.00**

Job No: **Soakpit 1** Page: **C/01**

Section: **Proposed dwelling @ Killakee Green, Firhouse, Dublin** Prepared By: **DR** Date: **13/01/2022**

ALTERNATIVE SOAKAWAY SIZES			
	trench soakaways		
	width of trench [mm]:	<b>450</b>	<b>600</b>
required trench length [m]:	7.16	5.67	4.08
ring soakaways			
diameter of ring [mm]:	1500	2100	2400
required pit diameter [m]:	3.32	3.32	3.32

\* Based on effective depth and number of pits as in Soakaway Data table

SUMMARY OF CALCULATIONS	
critical design rainfall duration 't <sub>crit</sub> ' =	60 min
required storage volume 'V <sub>req</sub> ' =	2.44 m <sup>3</sup>
provided storage volume 'V <sub>prov</sub> ' =	2.66 m <sup>3</sup>
utilisation factor =	<b>0.92 .OK</b>
required time to discharge 50% 't <sub>50</sub> ' =	1.25 hours
utilisation factor =	<b>0.05 .OK</b>

GENERAL DATA	
site location:	<b>Ireland</b>
soakaway type:	<b>infilled pit or trench</b>
impermeable area drained to soakaway 'A' [m <sup>2</sup> ] =	<b>125</b>
60 min rainfall depth of 5 year return period 'R' [mm] =	<b>16</b>
M5-60 to M5-2d rainfall ratio 'r' =	<b>0.28</b>
allowance for climate change:	<b>20%</b>

SOAKAWAY DATA	
soakaway width 'W' [m] =	<b>0.50</b>
soakaway length 'L' [m] =	<b>7.00</b>
total depth from ground level 'D <sub>b</sub> ' [m] =	<b>1.20</b>
depth to drain invert level 'D <sub>d</sub> ' [m] =	<b>0.40</b>
soakaway effective depth 'D <sub>eff</sub> ' [m] =	0.80
free volume in infill aggregate [%] =	<b>95</b>

SOIL INFILTRATION DATA	
allowance for infiltration through soakaway base:	<b>50%</b>
available on-site infiltration test results:	<input checked="" type="radio"/> Yes <input type="radio"/> No
use soakage trial pit table below	
internal surface area of trial pit 'a <sub>p50</sub> ' [m <sup>2</sup> ] =	1.96
storage volume between 75-25% 'V <sub>p</sub> ' [m <sup>3</sup> ] =	0.24
time for water to fall from 75-25% 't <sub>p</sub> ' [min] =	53.33
soil infiltration rate 'f' [m/s] =	3.83E-05

SOAKAGE TRIAL PIT DATA	
soakage trial pit width 'W <sub>t</sub> ' [m] =	<b>0.80</b>
soakage trial pit length 'L <sub>t</sub> ' [m] =	<b>1.20</b>
total depth from ground level 'D <sub>ib</sub> ' [m] =	<b>1.20</b>
depth to pipe invert level 'D <sub>ip</sub> ' [m] =	<b>0.70</b>
soakage trial pit effective depth 'D <sub>teff</sub> ' [m] =	0.50
free volume in infill aggregate [%] =	<b>100</b>

NOTE: faces of excavation assumed to be vertical

REQUIRED STORAGE CAPACITY PER RAINFALL DURATION												outflow from soakaway [m <sup>3</sup> ]	required storage [m <sup>3</sup> ]
rainfall duration [min]	rainfall factor Z1	M5-D rainfalls [mm]	M30-D			ignore			ignore				
			Z2	rainfalls [mm]	inflow [m <sup>3</sup> ]	Z2	rainfalls [mm]	inflow [m <sup>3</sup> ]	Z2	rainfalls [mm]	inflow [m <sup>3</sup> ]		
5	0.33	5.21	1.44	9.02	1.13							0.09	1.04
10	0.48	7.57	1.47	13.31	1.66							0.18	1.49
15	0.58	9.14	1.48	16.24	2.03							0.27	1.76
30	0.76	11.96	1.49	21.41	2.68							0.53	2.14
<b>60</b>	<b>1.00</b>	<b>15.70</b>	<b>1.49</b>	<b>28.08</b>	<b>3.51</b>							<b>1.07</b>	<b>2.44</b>
120	1.27	19.88	1.47	35.15	4.39							2.14	2.26
240	1.63	25.53	1.46	44.67	5.58							4.27	1.31
360	1.86	29.20	1.45	50.67	6.33							6.41	0.00
600	2.22	34.79	1.43	59.66	7.46							10.68	0.00
1440	3.05	47.85	1.38	79.36	9.92							25.62	0.00

\* Z2 is a growth factor from M5 rainfalls

SOAKAGE TRIAL PIT INFILTRATION TEST RESULTS																				
water level measurement N°:		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Soakage Trial 1	time [min] =	<b>0</b>	<b>50</b>																	
	depth to water [m] =	<b>0.80</b>	<b>1.10</b>																	
Soakage Trial 2	time [min] =	<b>0</b>	<b>55</b>																	
	depth to water [m] =	<b>0.80</b>	<b>1.10</b>																	
Soakage Trial 3	time [min] =	<b>0</b>	<b>64</b>																	
	depth to water [m] =	<b>0.80</b>	<b>1.10</b>																	

USE FIGURED DIMENSIONS IN PREFERENCE TO SCALING FROM DRAWINGS  
ALL MEASUREMENTS, HEIGHTS, AREAS, LEVELS AND CONSTRUCTIONAL  
DETAILS TO BE CHECKED AND VERIFIED BY THE BUILDING CONTRACTOR,  
SUB-CONTRACTOR OR DIRECT LABOUR CONTRACTOR PRIOR TO THE  
COMMENCEMENT OF ANY WORKS OR AGREEMENTS.

CLIENT: c/o SHD Consulting Engineers

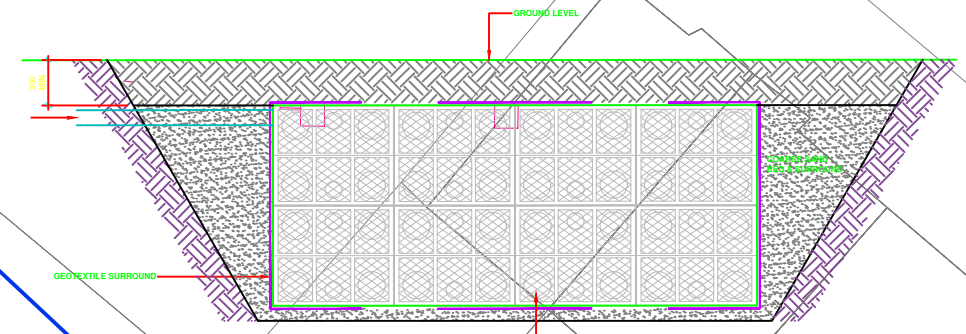
PROJECT: Proposed dwelling @ Killakee Green,  
Firhouse, Dublin

**Cillron Limited**  
Site Suitability Assessments  
& Land Surveys  
Newtownmoyaghy  
Kilcock  
Co.Meath  
Ireland  
Mobile: 0876636757  
Email: percolationtests@gmail.com

DRAWN BY:	SCALE:
ORIGIN DATE:	DRAWING NUMBER:
13/01/2022	

FOR PLANNING PURPOSES ONLY

Min 2.44m<sup>3</sup> storage required.  
7.0m x 0.5m with an effective depth of  
0.80m (see attached calc page).  
Soakpit to be located min 5m from any  
dwelling & 3m from any boundary.



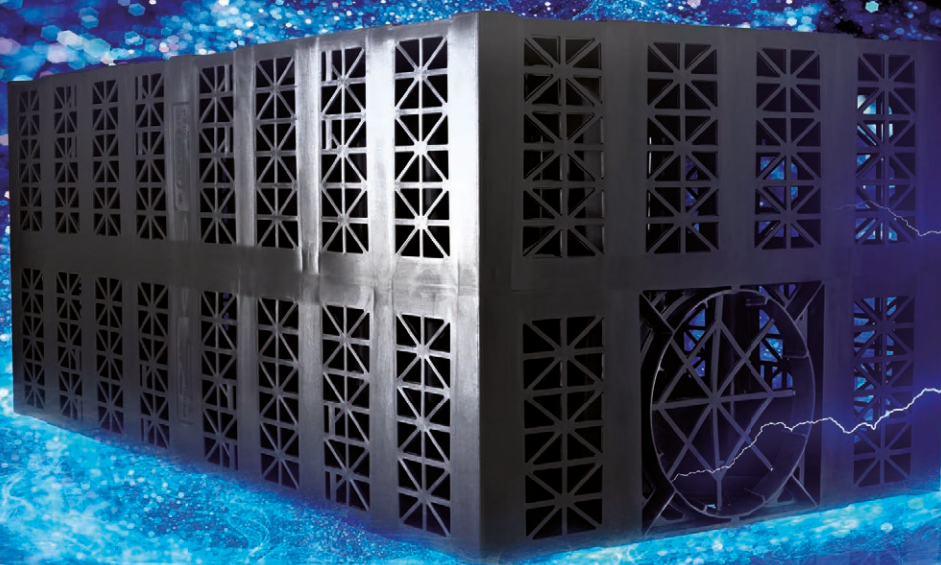
**SOAKAWAY DETAIL**

Example cross section not to scale.

# AquaCell

Re-engineered to rain  
supreme for years to come





The new AquaCell range engineered  
from reformulated, recycled material.

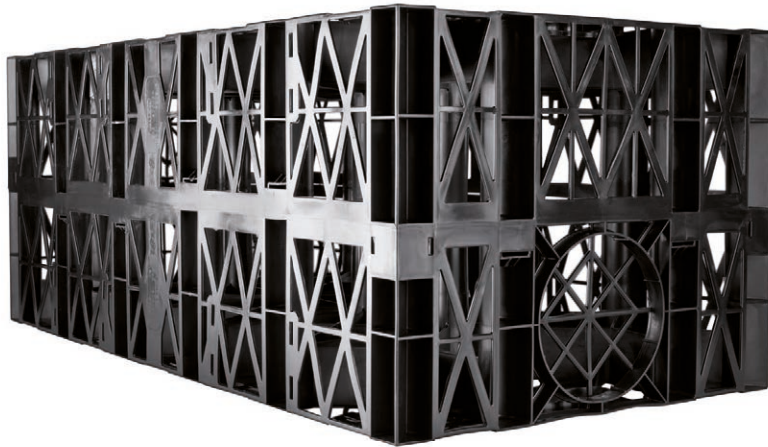


**wavin**

# AquaCell ECO


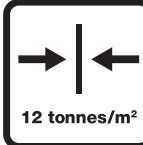


ECO is manufactured from specially reformulated, recycled material and has been designed for shallow, non-trafficked, landscaped applications.

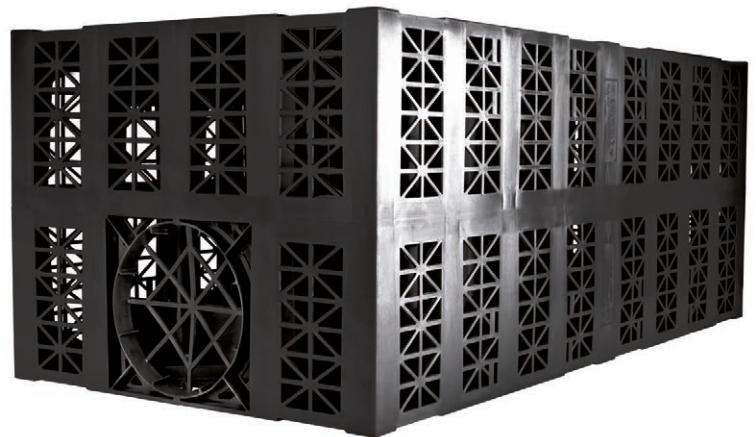
 <p>21 tonnes/m<sup>2</sup></p>	 <p>5 tonnes/m<sup>2</sup></p>
 <p>LOADING</p>	 <p>MAX INVERT DEPTH 2.7m NON-LOADED</p>



# AquaCell CORE-R

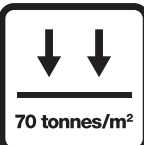
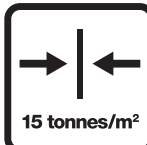



CORE-R has been designed for use in deep applications, subject to both regular and heavy traffic loadings, such as cars and HGV's.

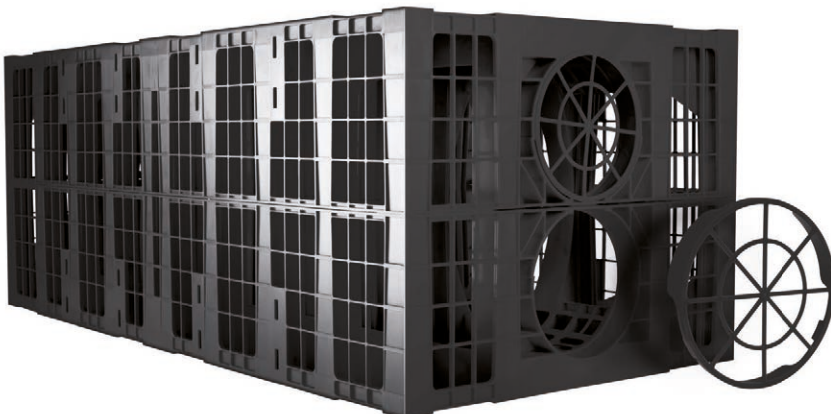
 <p>67 tonnes/m<sup>2</sup></p>	 <p>12 tonnes/m<sup>2</sup></p>
 <p>LOADING</p>	 <p>MAX INVERT DEPTH 6.2m LOADING ≤ 44 tonnes</p>

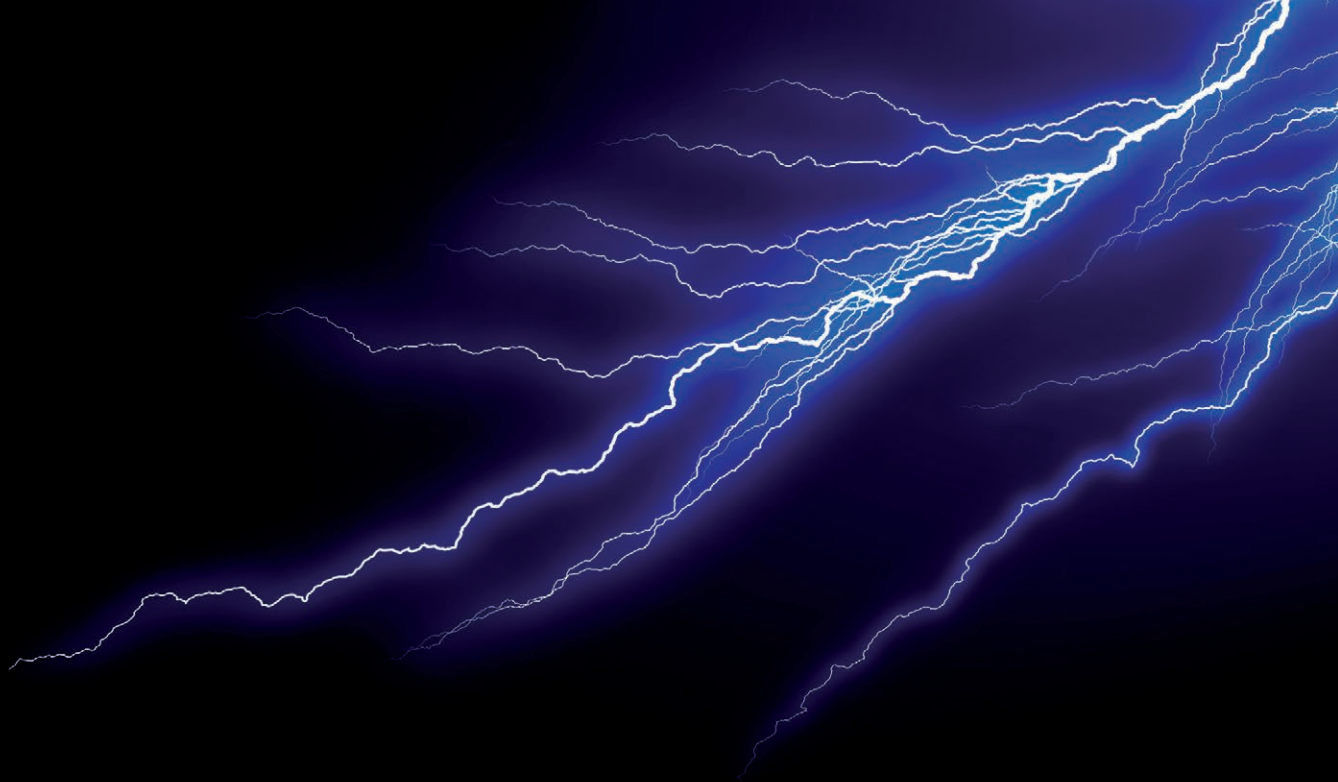


# AquaCell PLUS-R

PLUS-R has been designed primarily for use in applications where inspection is required, and is suitable for use in all applications from landscaped areas to heavily trafficked areas.

 <p>70 tonnes/m<sup>2</sup></p>	 <p>15 tonnes/m<sup>2</sup></p>	 <p>MAX INVERT DEPTH 7.3m LOADING ≤ 44 tonnes</p>
 <p>LOADING</p>	 <p>CCTV INSPECTION</p>	



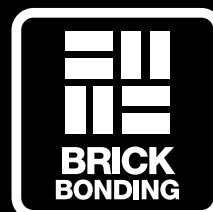
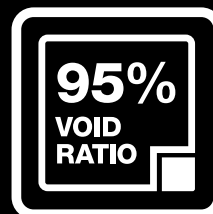
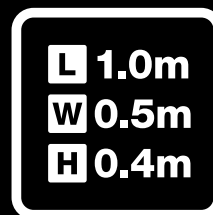
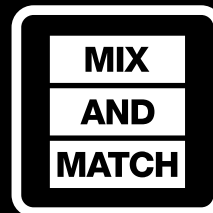


# The best in stormwater solutions made better still

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Met Eireann  
Return Period Rainfall Depths for sliding Durations  
Irish Grid: Easting: 300937, Northing: 228848,

DURATION	Interval		Years													
	6months,	1year,	2,	3,	4,	5,	10,	20,	30,	50,	75,	100,	150,	200,	250,	500,
5 mins	2.4,	3.6,	4.2,	5.2,	5.9,	6.4,	8.2,	10.3,	11.7,	13.7,	15.5,	16.9,	19.1,	20.9,	22.3,	N/A,
10 mins	3.4,	5.0,	5.9,	7.2,	8.2,	8.9,	11.4,	14.3,	16.2,	19.0,	21.6,	23.5,	26.6,	29.1,	31.1,	N/A,
15 mins	4.0,	5.9,	6.9,	8.5,	9.6,	10.5,	13.4,	16.8,	19.1,	22.4,	25.4,	27.7,	31.3,	34.2,	36.6,	N/A,
30 mins	5.2,	7.6,	9.0,	11.0,	12.4,	13.5,	17.1,	21.4,	24.2,	28.3,	31.9,	34.8,	39.2,	42.7,	45.7,	N/A,
1 hours	6.9,	9.9,	11.6,	14.2,	16.0,	17.3,	21.9,	27.2,	30.7,	35.7,	40.2,	43.7,	49.2,	53.4,	57.0,	N/A,
2 hours	9.0,	12.9,	15.1,	18.3,	20.5,	22.3,	28.0,	34.5,	38.9,	45.0,	50.6,	54.9,	61.6,	66.8,	71.1,	N/A,
3 hours	10.6,	15.1,	17.6,	21.3,	23.8,	25.8,	32.3,	39.7,	44.6,	51.6,	57.9,	62.7,	70.2,	76.1,	81.0,	N/A,
4 hours	11.8,	16.8,	19.6,	23.7,	26.4,	28.6,	35.7,	43.8,	49.2,	56.9,	63.7,	68.9,	77.1,	83.5,	88.8,	N/A,
6 hours	13.9,	19.7,	22.8,	27.5,	30.6,	33.1,	41.2,	50.4,	56.5,	65.2,	72.8,	78.8,	88.0,	95.1,	101.1,	N/A,
9 hours	16.3,	22.9,	26.5,	31.9,	35.5,	38.3,	47.6,	58.0,	64.9,	74.7,	83.3,	90.0,	100.4,	108.4,	115.1,	N/A,
12 hours	18.2,	25.6,	29.5,	35.4,	39.4,	42.5,	52.7,	64.1,	71.6,	82.2,	91.7,	99.0,	110.2,	118.9,	126.2,	N/A,
18 hours	21.4,	29.9,	34.4,	41.1,	45.7,	49.2,	60.8,	73.7,	82.3,	94.3,	104.9,	113.1,	125.7,	135.5,	143.6,	N/A,
24 hours	23.9,	33.3,	38.3,	45.7,	50.7,	54.6,	67.3,	81.4,	90.8,	103.8,	115.4,	124.3,	138.1,	148.7,	157.5,	188.2,
2 days	30.1,	40.7,	46.2,	54.3,	59.7,	63.9,	77.2,	92.0,	101.5,	114.8,	126.4,	135.3,	148.9,	159.3,	167.9,	197.5,
3 days	35.1,	46.7,	52.6,	61.3,	67.1,	71.5,	85.5,	100.8,	110.7,	124.3,	136.1,	145.2,	158.9,	169.4,	178.0,	207.5,
4 days	39.5,	51.9,	58.3,	67.5,	73.5,	78.1,	92.8,	108.6,	118.8,	132.7,	144.8,	154.0,	168.0,	178.6,	187.2,	216.9,
6 days	47.4,	61.2,	68.2,	78.2,	84.8,	89.8,	105.4,	122.3,	133.0,	147.6,	160.2,	169.7,	184.0,	194.9,	203.8,	233.9,
8 days	54.4,	69.4,	76.9,	87.7,	94.7,	100.0,	116.6,	134.3,	145.4,	160.6,	173.6,	183.5,	198.2,	209.4,	218.4,	249.1,
10 days	60.8,	76.9,	84.9,	96.3,	103.7,	109.3,	126.7,	145.1,	156.7,	172.4,	185.8,	195.9,	211.1,	222.5,	231.8,	263.0,
12 days	66.9,	83.9,	92.4,	104.4,	112.1,	117.9,	136.0,	155.2,	167.2,	183.3,	197.1,	207.5,	223.0,	234.6,	244.1,	275.9,
16 days	78.2,	97.0,	106.2,	119.2,	127.6,	133.8,	153.2,	173.6,	186.2,	203.3,	217.7,	228.6,	244.7,	256.8,	266.6,	299.4,
20 days	88.8,	109.1,	119.0,	132.9,	141.8,	148.4,	168.9,	190.3,	203.6,	221.4,	236.5,	247.7,	264.4,	276.9,	287.0,	320.7,
25 days	101.3,	123.2,	133.9,	148.8,	158.3,	165.4,	187.1,	209.7,	223.7,	242.3,	258.0,	269.7,	287.0,	300.0,	310.4,	345.1,

NOTES:

N/A Data not available

These values are derived from a Depth Duration Frequency (DDF) Model

For details refer to:

'Fitzgerald D. L. (2007), Estimates of Point Rainfall Frequencies, Technical Note No. 61, Met Eireann, Dublin',

Available for download at [www.met.ie/climate/dataproducts/Estimation-of-Point-Rainfall-Frequencies\\_TN61.pdf](http://www.met.ie/climate/dataproducts/Estimation-of-Point-Rainfall-Frequencies_TN61.pdf)



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Killakee Green  
13/01/2022



Killakee Green  
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Killakee Green  
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[sound.ie](http://sound.ie)

David Ryan  
Newtownmoyaghy  
Kilcock  
Co Meath

Date: 06/04/2021  
Reference: RYDA01001

## INSURANCE CERTIFICATE

To Whom It May Concern

We confirm we act as Insurance Brokers to the above and set out below a summary of cover we have arranged:

**Business Description:** *Soil Engineer (Percolation Testing)*

### PROFESSIONAL INDEMNITY

<b>Policy No:</b>	<b>PID00024862</b>
<b>Provider:</b>	<b>Optio Europe Ltd</b>
<b>Insurer:</b>	<b>Accredited Insurance (Europe) Ltd</b>
<b>Period of Insurance:</b>	<b>04/03/2021 to 03/03/2022</b>
<b>Limit of Indemnity:</b>	<b>€1,000,000</b>

*Subject always to Insurers policy wording, warranties, conditions, restrictions & exclusions a copy of which is available on request.*

We trust this is in order but if you have any queries, please do not hesitate to contact us.

Yours sincerely,

Gary Kinsella  
Commercial Broker  
P: (01) 524 1415  
E: [Gary@sound.ie](mailto:Gary@sound.ie)