



PercolationTests.ie
Planning Assessments & Land Surveys

Tel: 087 6636 757 Email: percolationtests@gmail.com Web: www.percolationtests.ie

BRE Digest 365 Report.

Prepared on behalf of:

John Gorman

At:

**126b Sarsfield Park,
Lucan,
Co. Dublin.**



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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.

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BRE digest 365 test

Revision

Job No: Soakpit1 Page: C/01

Section: 126b Sarsfield Park, Lucan, Co. Dublin

Prepared By: DR Date: 28/11/2023

| ALTERNATIVE SOAKAWAY SIZES | | | | |
|-----------------------------|----------------------------|------|------|------|
| | trench soakaways | | | |
| | width of trench [mm]: | 450 | 600 | 900 |
| required trench length [m]: | 11.09 | 9.02 | 6.69 | |
| | ring soakaways | | | |
| | diameter of ring [mm]: | 1050 | 1350 | 1500 |
| | required pit diameter [m]: | 2.44 | 2.44 | 2.45 |

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

| SUMMARY OF CALCULATIONS | |
|--|---------------------|
| critical design rainfall duration 't _{crit} ' = | 600 min |
| required storage volume 'V _{req} ' = | 5.11 m ³ |
| provided storage volume 'V _{prov} ' = | 5.13 m ³ |
| utilisation factor = | 1.00 .OK |
| required time to discharge 50% 't ₅₀ ' = | 12.77 hours |
| utilisation factor = | 0.53 .OK |

| GENERAL DATA | |
|--|-----------------------|
| site location: | ██████████ Ireland |
| soakaway type: | geocellular units (?) |
| impermeable area drained to soakaway 'A' [m ²] = | 118 |
| 60 min rainfall depth of 5 year return period 'R' [mm] = | 16 (?) |
| M5-60 to M5-2d rainfall ratio 'r' = | 0.28 |
| allowance for climate change: | 20% |

| SOAKAWAY DATA | |
|---|--------|
| soakaway width 'W' [m] = | 1.50 |
| soakaway length 'L' [m] = | 4.50 |
| total depth from ground level 'D _b ' [m] = | 1.20 |
| depth to drain invert level 'D _d ' [m] = | 0.40 |
| soakaway effective depth 'D _{eff} ' [m] = | 0.80 |
| free volume in infill aggregate [%] = | 95 (?) |

| SOIL INFILTRATION DATA | |
|--|---|
| allowance for infiltration through soakaway base: | No (?) |
| 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 _{p50} ' [m ²] = | 1.88 |
| storage volume between 75-25% 'V _p ' [m ³] = | 0.24 |
| time for water to fall from 75-25% 't _p ' [min] = | 183.00 |
| soil infiltration rate 'I' [m/s] = | 1.16E-05 |

| SOAKAGE TRIAL PIT DATA | |
|--|---------|
| soakage trial pit width 'W _t ' [m] = | 0.60 |
| soakage trial pit length 'L _t ' [m] = | 1.00 |
| total depth from ground level 'D _{tb} ' [m] = | 1.20 |
| depth to pipe invert level 'D _{tp} ' [m] = | 0.40 |
| soakage trial pit effective depth 'D _{teff} ' [m] = | 0.80 |
| free volume in infill aggregate [%] = | 100 (?) |

NOTE: faces of excavation assumed to be vertical

Infiltration rate: Good – No mottling above 1.2m below ground level

| REQUIRED STORAGE CAPACITY PER RAINFALL DURATION (?) | | | | | | | | | | | | |
|---|--------------------|---------------------|-------|----------------|--------------------------|--------|----------------|--------------------------|----|---|------------------------------------|----------------|
| rainfall duration [min] | rainfall factor Z1 | M5-D rainfalls [mm] | M30-D | | | ignore | | ignore | | outflow from soakaway [m ³] | required storage [m ³] | |
| | | | Z2 | rainfalls [mm] | inflow [m ³] | Z2 | rainfalls [mm] | inflow [m ³] | Z2 | | | rainfalls [mm] |
| 5 | 0.33 | 5.33 | 1.44 | 9.24 | 1.09 | | | | | 0.02 | 1.07 | |
| 10 | 0.48 | 7.73 | 1.47 | 13.62 | 1.61 | | | | | 0.03 | 1.57 | |
| 15 | 0.58 | 9.33 | 1.48 | 16.61 | 1.96 | | | | | 0.05 | 1.91 | |
| 30 | 0.76 | 12.21 | 1.49 | 21.86 | 2.58 | | | | | 0.10 | 2.48 | |
| 60 | 1.00 | 16.00 | 1.49 | 28.60 | 3.37 | | | | | 0.20 | 3.17 | |
| 120 | 1.26 | 20.21 | 1.47 | 35.72 | 4.22 | | | | | 0.40 | 3.81 | |
| 240 | 1.62 | 25.87 | 1.46 | 45.23 | 5.34 | | | | | 0.80 | 4.53 | |
| 360 | 1.85 | 29.55 | 1.44 | 51.23 | 6.04 | | | | | 1.21 | 4.84 | |
| 600 | 2.20 | 35.20 | 1.43 | 60.31 | 7.12 | | | | | 2.01 | 5.11 | |
| 1440 | 3.01 | 48.21 | 1.38 | 79.87 | 9.42 | | | | | 4.82 | 4.60 | |

* Z2 is growth factor from M5 rainfalls

| SOAKAGE TRIAL PIT INFILTRATION TEST RESULTS (?) | | | | | | | | | | | | | | | | | | | | |
|---|----------------------|------|------|------|------|------|---|---|---|---|----|----|----|----|----|----|----|----|----|----|
| water level measurement N ^o : | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| Soakage Trial 1 | time [min] = | 0 | 40 | 82 | 128 | 183 | | | | | | | | | | | | | | |
| | depth to water [m] = | 0.60 | 0.70 | 0.80 | 0.90 | 1.00 | | | | | | | | | | | | | | |

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.

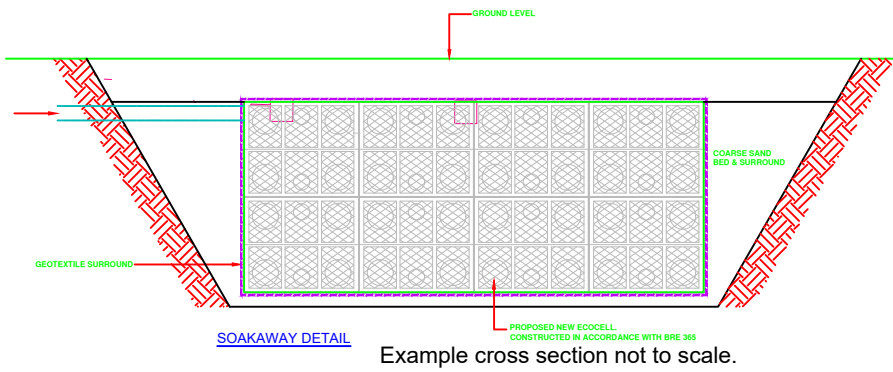
CLIENT: John Gorman

PROJECT: 126b Sarsfield Park,
 Lucan, Co. Dublin

Cillron Limited
 Site Suitability Assessments
 & Land Surveys
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 Ireland
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| | |
|--------------|-----------------|
| DRAWN BY: | SCALE: |
| ORIGIN DATE: | DRAWING NUMBER: |
| 28/11/2023 | |

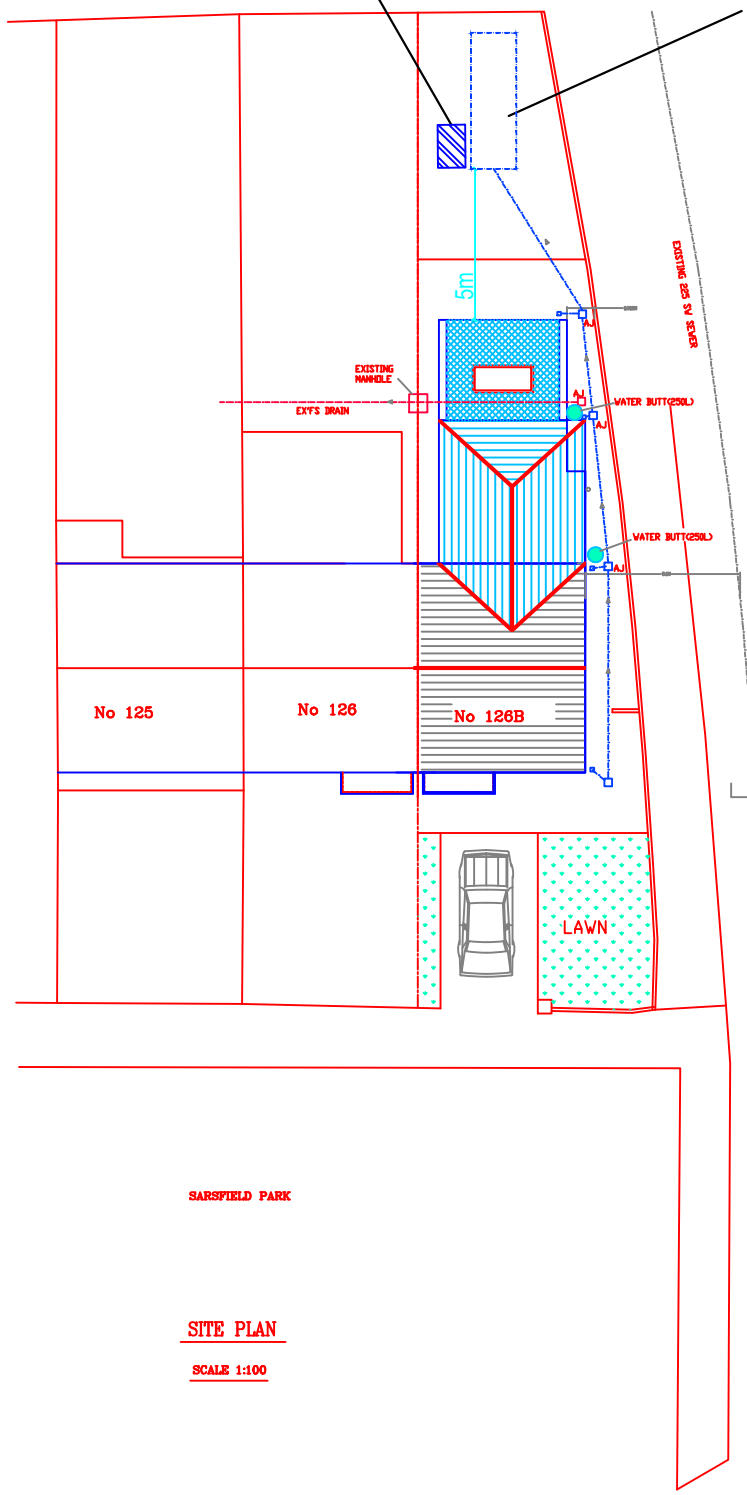
FOR PLANNING PURPOSES ONLY



Example cross section not to scale.

BRE digest infiltration test hole

Min 5.11m³ storage required for 118m² hardstanding. 4.5m x 1.5m with an effective depth of 0.80m (see attached calc page).

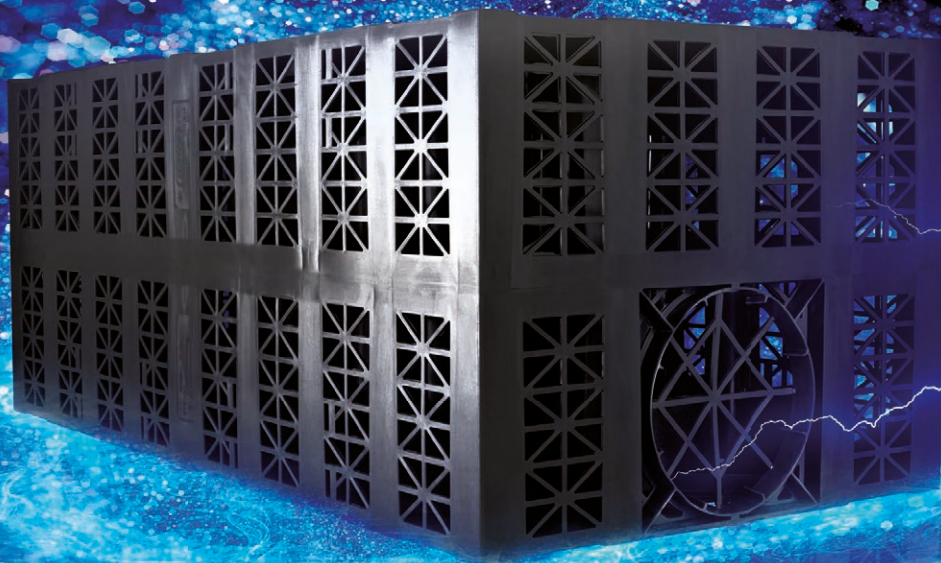


SARSFIELD PARK
 SITE PLAN
 SCALE 1:100

AquaCell

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supreme for years to come





The new AquaCell range engineered
from reformulated, recycled material.

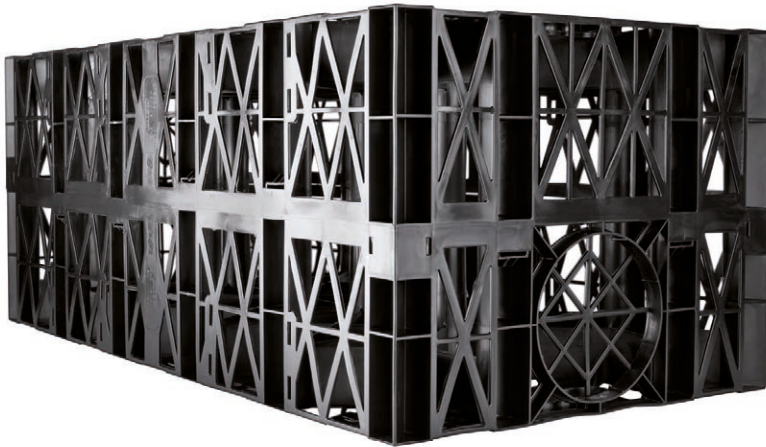


wavin

AquaCell ECO





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

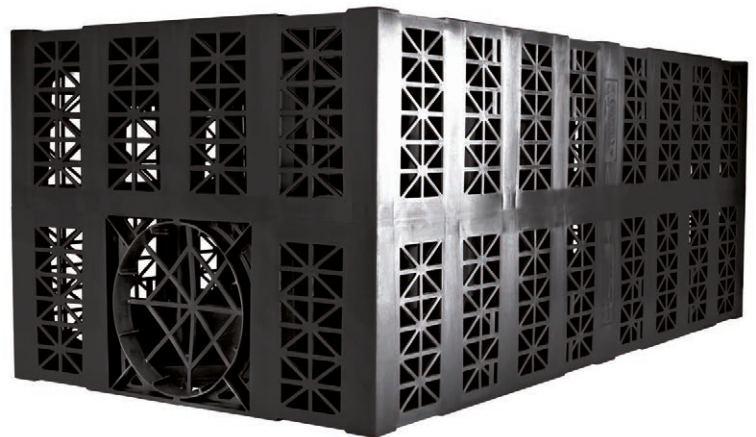
| | |
|---|---|
|  <p>21 tonnes/m²</p> |  <p>5 tonnes/m²</p> |
|  <p>LOADING</p> |  <p>NON-LOADED</p> |



AquaCell CORE-R

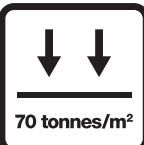
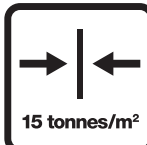



CORE-R has been designed for use in deep applications, subject to both regular and heavy traffic loadings, such as cars and HGV's.

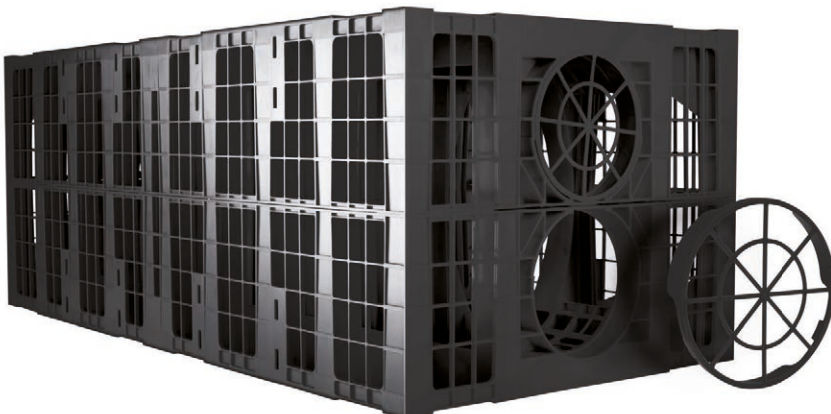
| | |
|--|--|
|  <p>67 tonnes/m²</p> |  <p>12 tonnes/m²</p> |
|  <p>LOADING</p> |  |

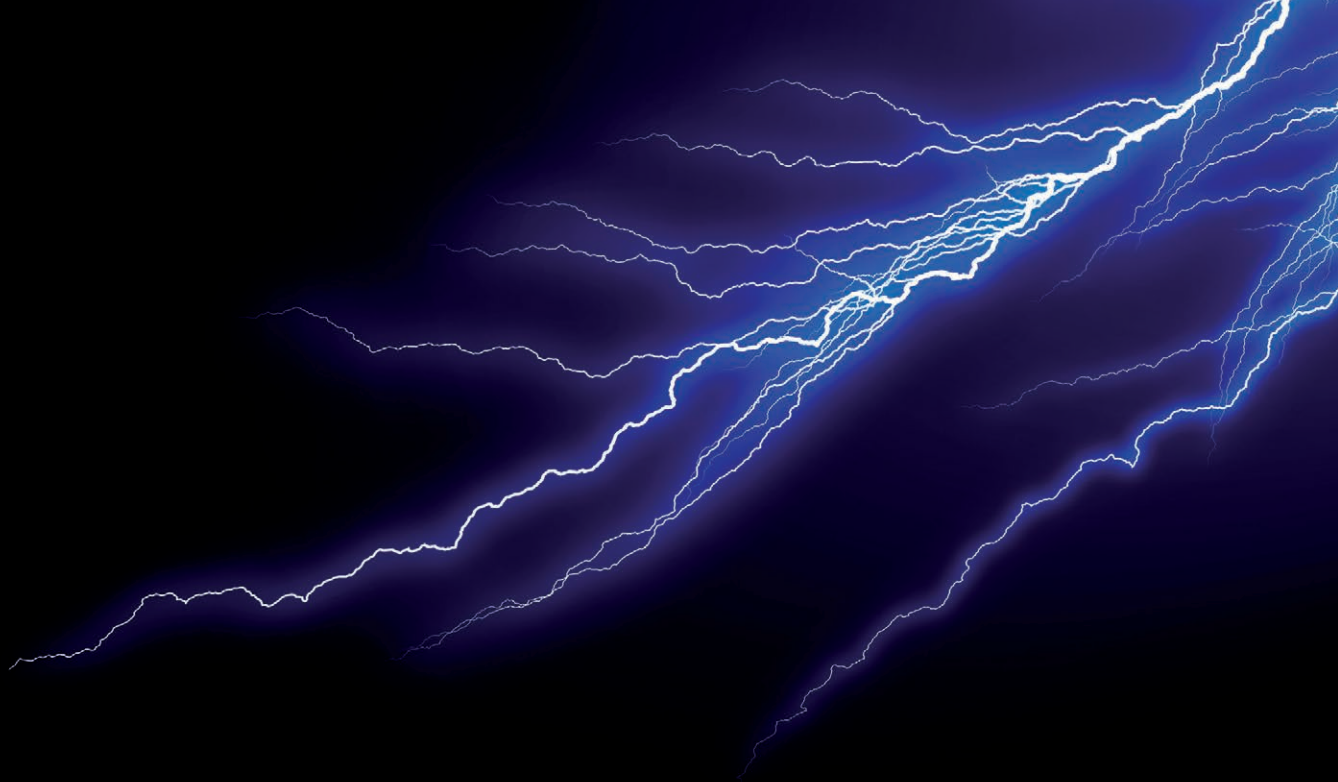


AquaCell PLUS-R

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/m²</p> |  <p>15 tonnes/m²</p> |  |
|  <p>LOADING</p> |  <p>CCTV INSPECTION</p> | |



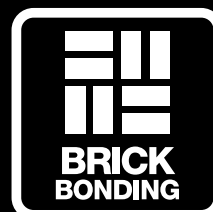
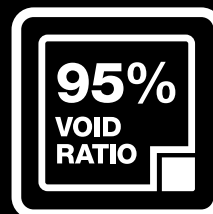
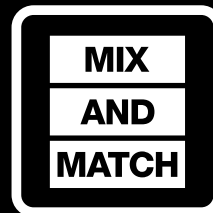


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AquaCell systems are the tried, tested and fully BBA approved answer to the effective management of excessive rainfall, whether through attenuation or infiltration solutions.

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Met Eireann
Return Period Rainfall Depths for sliding Durations
Irish Grid: Easting: 298196, Northing: 235869,

| DURATION | Interval | | Years | | | | | | | | | | | | | |
|----------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | 6months, | 1year, | 2, | 3, | 4, | 5, | 10, | 20, | 30, | 50, | 75, | 100, | 150, | 200, | 250, | 500, |
| 5 mins | 2.3, | 3.3, | 3.9, | 4.8, | 5.4, | 5.9, | 7.5, | 9.4, | 10.6, | 12.4, | 14.0, | 15.2, | 17.2, | 18.7, | 20.0, | N/A, |
| 10 mins | 3.2, | 4.6, | 5.5, | 6.7, | 7.6, | 8.2, | 10.5, | 13.0, | 14.8, | 17.3, | 19.5, | 21.2, | 24.0, | 26.1, | 27.9, | N/A, |
| 15 mins | 3.7, | 5.5, | 6.4, | 7.9, | 8.9, | 9.7, | 12.3, | 15.3, | 17.4, | 20.3, | 22.9, | 25.0, | 28.2, | 30.7, | 32.8, | N/A, |
| 30 mins | 4.9, | 7.1, | 8.3, | 10.1, | 11.4, | 12.4, | 15.6, | 19.3, | 21.8, | 25.3, | 28.4, | 30.9, | 34.7, | 37.7, | 40.2, | N/A, |
| 1 hours | 6.5, | 9.3, | 10.8, | 13.1, | 14.6, | 15.8, | 19.8, | 24.3, | 27.3, | 31.5, | 35.3, | 38.2, | 42.8, | 46.3, | 49.2, | N/A, |
| 2 hours | 8.6, | 12.1, | 14.0, | 16.8, | 18.7, | 20.2, | 25.0, | 30.5, | 34.1, | 39.2, | 43.7, | 47.2, | 52.6, | 56.8, | 60.3, | N/A, |
| 3 hours | 10.2, | 14.2, | 16.3, | 19.5, | 21.7, | 23.3, | 28.8, | 34.9, | 38.9, | 44.6, | 49.6, | 53.5, | 59.4, | 64.1, | 67.9, | N/A, |
| 4 hours | 11.4, | 15.8, | 18.2, | 21.7, | 24.0, | 25.8, | 31.7, | 38.4, | 42.7, | 48.8, | 54.2, | 58.4, | 64.8, | 69.7, | 73.8, | N/A, |
| 6 hours | 13.4, | 18.5, | 21.1, | 25.1, | 27.8, | 29.8, | 36.5, | 43.9, | 48.8, | 55.5, | 61.5, | 66.1, | 73.2, | 78.6, | 83.1, | N/A, |
| 9 hours | 15.8, | 21.6, | 24.6, | 29.1, | 32.1, | 34.4, | 41.9, | 50.2, | 55.6, | 63.1, | 69.8, | 74.9, | 82.6, | 88.6, | 93.6, | N/A, |
| 12 hours | 17.7, | 24.1, | 27.4, | 32.3, | 35.6, | 38.1, | 46.2, | 55.2, | 61.1, | 69.2, | 76.3, | 81.7, | 90.1, | 96.5, | 101.8, | N/A, |
| 18 hours | 20.9, | 28.1, | 31.9, | 37.5, | 41.2, | 44.0, | 53.1, | 63.1, | 69.6, | 78.6, | 86.5, | 92.6, | 101.7, | 108.8, | 114.6, | N/A, |
| 24 hours | 23.4, | 31.4, | 35.6, | 41.6, | 45.6, | 48.7, | 58.6, | 69.4, | 76.5, | 86.1, | 94.6, | 101.1, | 110.9, | 118.5, | 124.6, | 146.0, |
| 2 days | 29.5, | 38.5, | 43.1, | 49.7, | 54.0, | 57.3, | 67.8, | 79.1, | 86.3, | 96.2, | 104.7, | 111.2, | 121.0, | 128.4, | 134.5, | 155.3, |
| 3 days | 34.5, | 44.3, | 49.2, | 56.3, | 60.9, | 64.4, | 75.4, | 87.2, | 94.7, | 104.8, | 113.6, | 120.2, | 130.1, | 137.6, | 143.8, | 164.6, |
| 4 days | 38.9, | 49.4, | 54.6, | 62.1, | 67.0, | 70.7, | 82.1, | 94.4, | 102.1, | 112.5, | 121.5, | 128.2, | 138.3, | 146.0, | 152.2, | 173.1, |
| 6 days | 46.7, | 58.4, | 64.2, | 72.4, | 77.6, | 81.6, | 93.9, | 107.0, | 115.1, | 126.1, | 135.4, | 142.4, | 152.9, | 160.8, | 167.2, | 188.6, |
| 8 days | 53.7, | 66.4, | 72.6, | 81.4, | 87.1, | 91.3, | 104.4, | 118.0, | 126.6, | 138.0, | 147.7, | 155.0, | 165.8, | 173.9, | 180.4, | 202.3, |
| 10 days | 60.2, | 73.8, | 80.4, | 89.7, | 95.7, | 100.1, | 113.8, | 128.1, | 137.0, | 148.8, | 158.9, | 166.4, | 177.5, | 185.8, | 192.5, | 214.9, |
| 12 days | 66.3, | 80.7, | 87.7, | 97.5, | 103.7, | 108.4, | 122.7, | 137.5, | 146.7, | 158.9, | 169.2, | 176.9, | 188.3, | 196.8, | 203.7, | 226.5, |
| 16 days | 77.7, | 93.6, | 101.2, | 111.9, | 118.6, | 123.6, | 138.9, | 154.7, | 164.5, | 177.4, | 188.2, | 196.3, | 208.2, | 217.0, | 224.2, | 247.8, |
| 20 days | 88.5, | 105.6, | 113.8, | 125.2, | 132.3, | 137.7, | 153.9, | 170.5, | 180.7, | 194.2, | 205.5, | 213.9, | 226.3, | 235.5, | 242.8, | 267.1, |
| 25 days | 101.1, | 119.7, | 128.5, | 140.7, | 148.4, | 154.0, | 171.3, | 188.8, | 199.6, | 213.7, | 225.5, | 234.3, | 247.1, | 256.7, | 264.3, | 289.4, |

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



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126b Sarsfield Park -
26/09/2023



BRE digest 365 test in
progress



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Date: 09/03/2023
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

| | |
|-----------------------------|--------------------------|
| Policy No. | PID00027964 |
| Insurer: | Robertson Low Insurances |
| Period of Insurance: | 04/03/2023 – 03/03/2024 |
| Limit of Indemnity: | €1,000,000 |

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,

Matthew Collins
Client Service Advisor
P: (01) 524 2614
E: Matthew@sound.ie