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:

c/o SHD Consulting Engineers

At:

Proposed dwelling @ Killakee Green, Firhouse, 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.

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]* :	**450**	**600**	**900**
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_{crit}' =	60	*min*
required storage volume 'V_{req}' =	2.44	m^3
provided storage volume 'V_{prov}' =	2.66	m^3
utilisation factor =	**0.92**	***.OK***
required time to discharge 50% 't_{50}' =	1.25	*hours*
utilisation factor =	**0.05**	***.OK***

GENERAL DATA	
site location: [redacted]	**Ireland**
soakaway type:	**infilled pit or trench**
impermeable area drained to soakaway 'A' *[m^2]* =	**125**
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] =	**0.50**
soakaway length 'L' [m] =	**7.00**
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:	**50%**
available on-site infiltration test results: (●) Yes ( ) No	
use soakage trial pit table below	
internal surface area of trial pit 'a_{p50}' [m^2] =	1.96
storage volume between 75-25% 'V_p' [m^3] =	0.24
time for water to fall from 75-25% 't_p' [min] =	53.33
soil infiltration rate 'f' [m/s] =	3.83E-05

SOAKAGE TRIAL PIT DATA	
soakage trial pit width 'W_t' *[m]* =	**0.80**
soakage trial pit length 'L_t' *[m]* =	**1.20**
total depth from ground level 'D_{tb}' *[m]* =	**1.20**
depth to pipe invert level 'D_{tp}' *[m]* =	**0.70**
soakage trial pit effective depth 'D_{teff}' *[m]* =	0.50
free volume in infill aggregate *[%]* =	**100**

NOTE: faces of excavation assumed to be vertical

REQUIRED STORAGE CAPACITY PER RAINFALL DURATION

rainfall duration *[min]*	rainfall factor Z1	**M5-D** rainfalls *[mm]*	**M30-D** Z2	**M30-D** rainfalls *[mm]*	**M30-D** inflow *[m^3]*	**ignore** Z2	**ignore** rainfalls *[mm]*	**ignore** inflow *[m^3]*	**ignore** Z2	**ignore** rainfalls *[mm]*	**ignore** inflow *[m^3]*	outflow from soakaway *[m^3]*	required storage *[m^3]*
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
60	1.00	15.70	1.49	28.08	3.51							1.07	**2.44**
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]* =	**0**	**50**																	
	depth to water *[m]* =	**0.80**	**1.10**																	
Soakage Trial 2	time *[min]* =	**0**	**55**																	
	depth to water *[m]* =	**0.80**	**1.10**																	
Soakage Trial 3	time *[min]* =	**0**	**64**																	
	depth to water *[m]* =	**0.80**	**1.10**																	

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

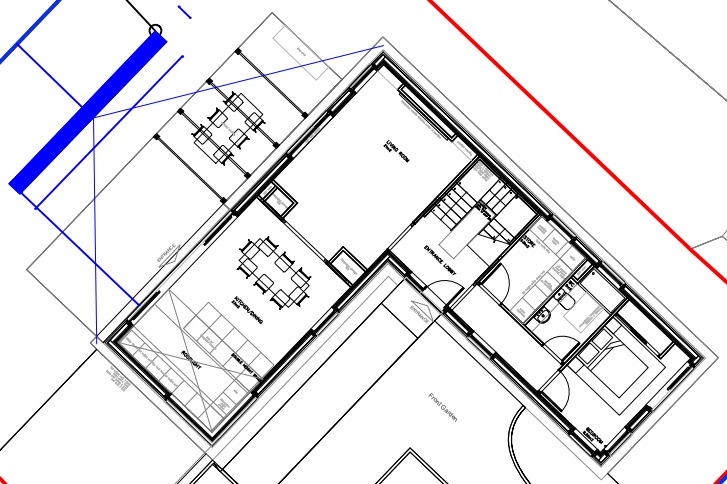
PROJECT: Proposed dwelling @ Killakee Green, Firhouse, Dublin

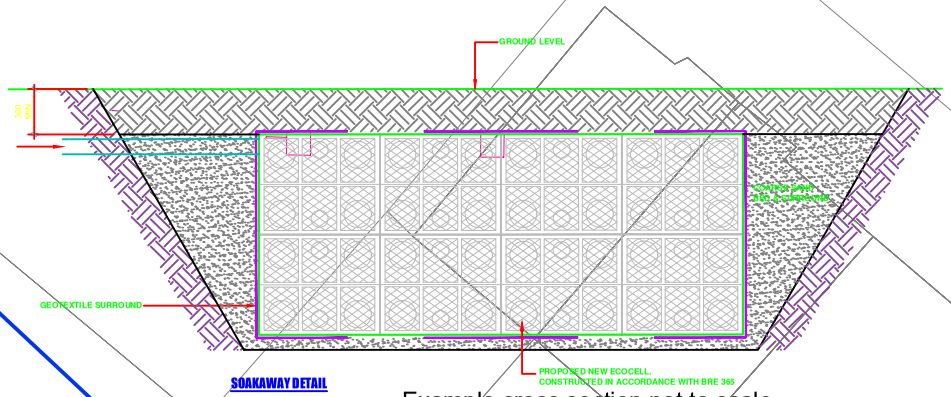
Cillron Limited
Site Suitability Assessments & Land Surveys
Newtownmoyaghy
Kilcock
Co.Meath
Ireland
Mobile: 0876636757
Email: percolationtests@gmail.com

DRAWN BY:
SCALE: 1:250
ORIGIN DATE: 13/01/2022
DRAWING NUMBER:

FOR PLANNING PURPOSES ONLY

Min 2.44m³ 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.





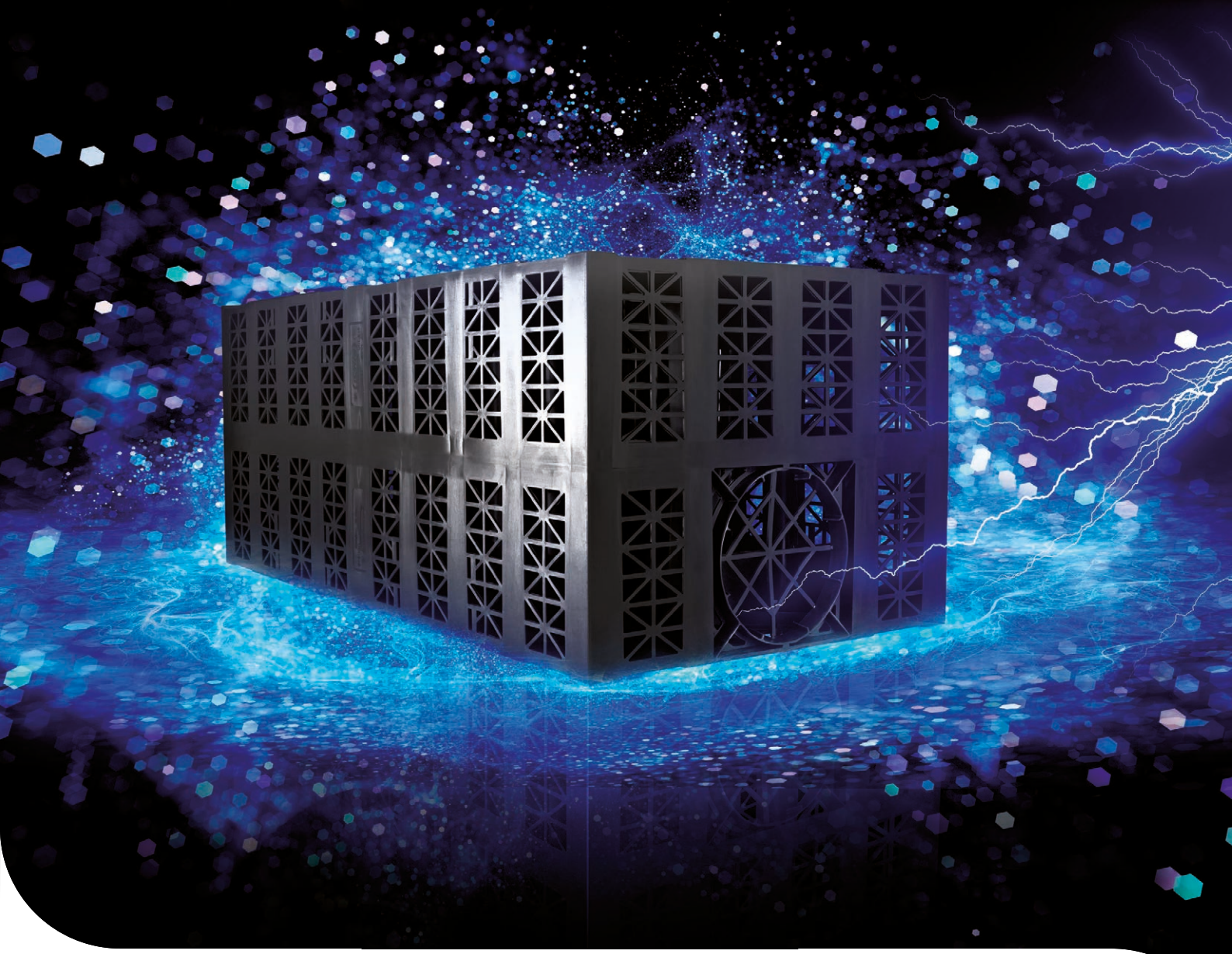
SOAKAWAY DETAIL

Example cross section not to scale.

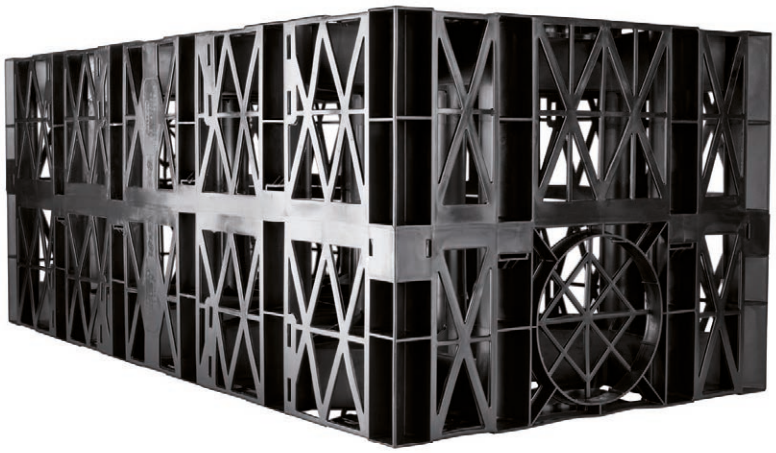
AquaCell

Re-engineered to rain supreme for years to come

The new AquaCell range engineered from reformulated, recycled material.

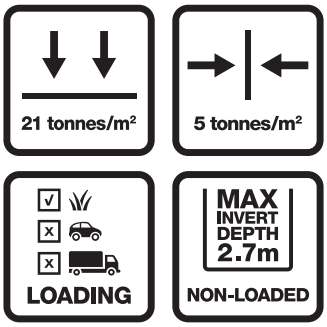


wavin



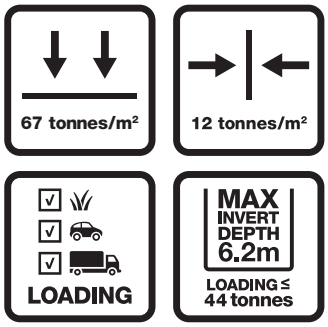
AquaCell
ECO

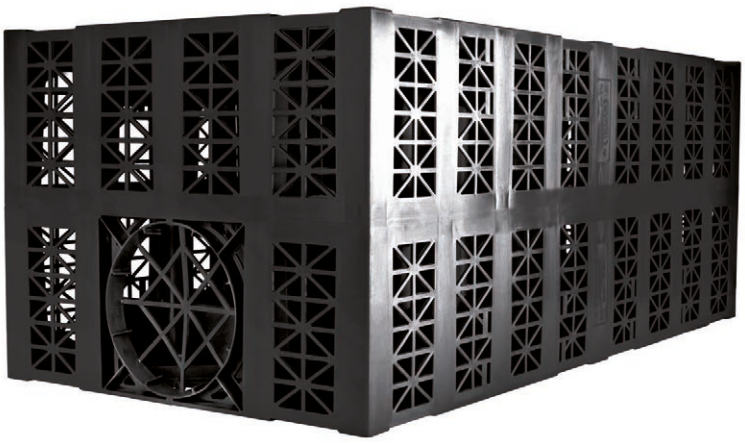
ECO is manufactured from specially reformulated, recycled material and has been designed for shallow, non-trafficked, landscaped applications.

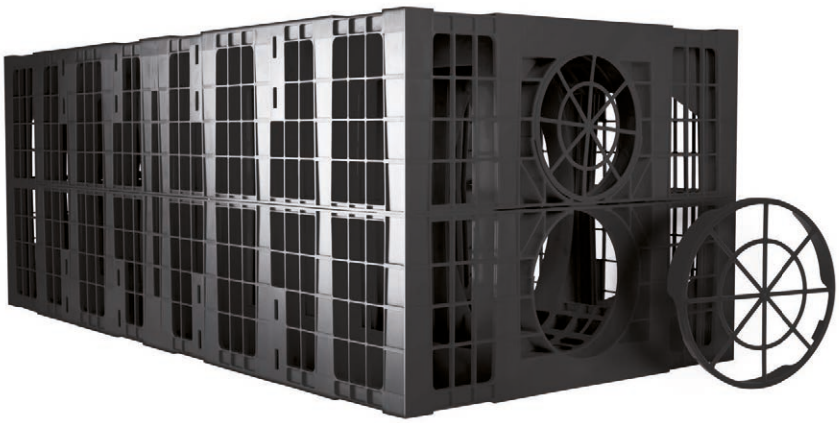


AquaCell
CORE-R

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

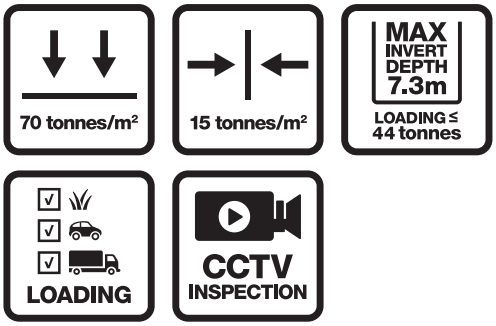


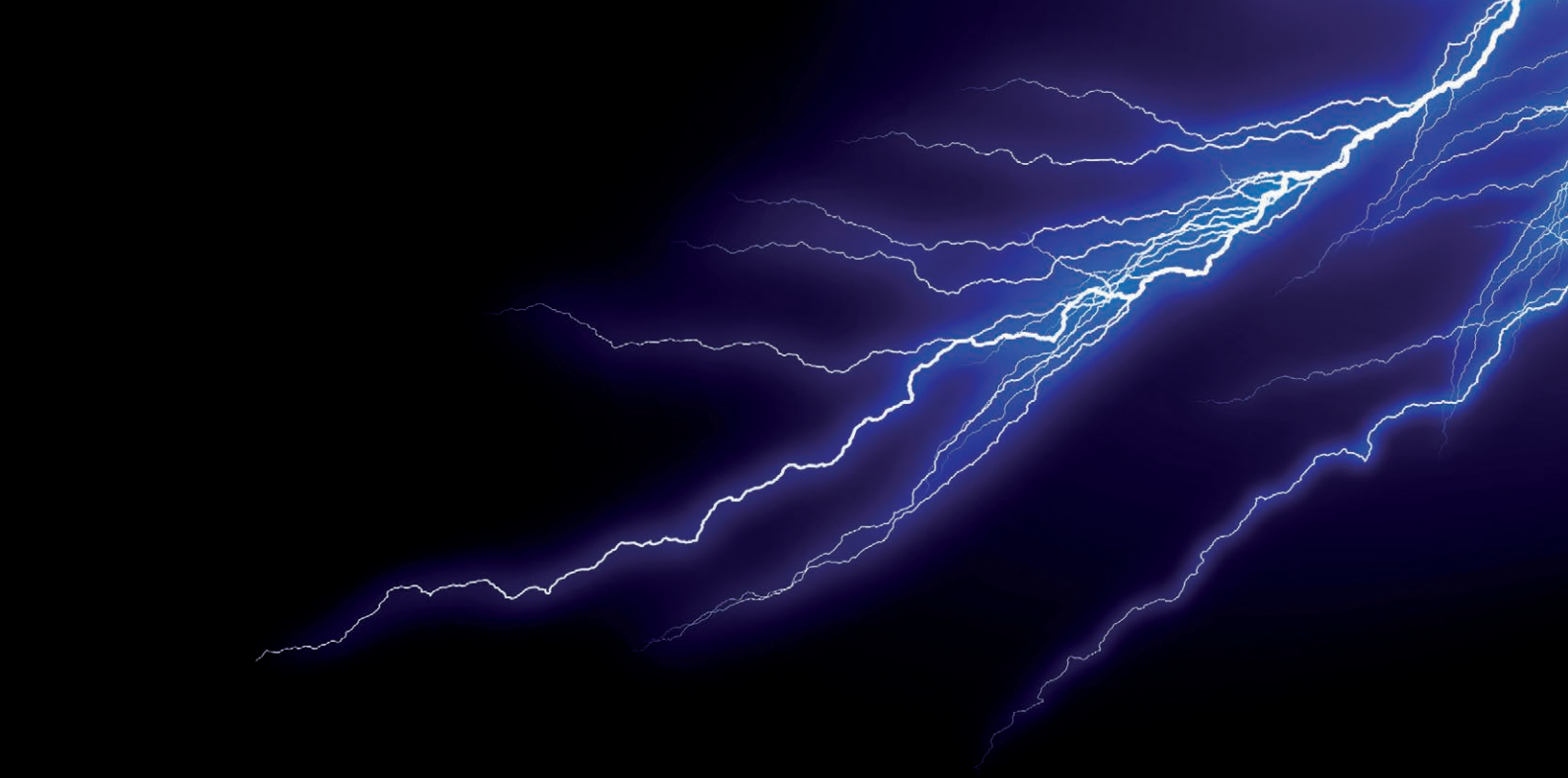




AquaCell
PLUS-R

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.





The best in stormwater solutions made better still

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

Now refined to offer three crate variants, the entire range is engineered from reformulated, recycled material for outstanding sustainable performance in every application.

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W 0.5m
H 0.4m

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WAV013 - January 2020

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

	Interval		Years											
DURATION	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

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13/01/2022

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Dublin 17

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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

Policy No:	**PID00024862**
Provider:	**Optio Europe Ltd**
Insurer:	**Accredited Insurance (Europe) Ltd**
Period of Insurance:	**04/03/2021 to 03/03/2022**
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,

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