



**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:

**Maurice Lyons**

At:

**Brownsbarn,  
Lower Baldonnell  
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.

**Cillron Limited**  
 Newtownmoyaghy, Kilcock, Co. Kildare.  
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 Tel: 087 6636757

**BRE Digest 365 Test**

Revision: 1.00

Job No: Soakpit 1 Page: C/01

Section: **Brownbarn, Lower Baldonnell, Co. Dublin**

Prepared By: DR Date: 24/08/2022

ALTERNATIVE SOAKAWAY SIZES			
trench soakaways			
width of trench [mm]:	450	600	900
required trench length [m]:	107.42	86.41	62.09
ring soakaways			
diameter of ring [mm]:	1500	2100	2400
required pit diameter [m]:	2.56	2.00	1.65

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

SUMMARY OF CALCULATIONS	
critical design rainfall duration 't <sub>crit</sub> ' =	120 min
required storage volume 'V <sub>req</sub> ' =	8.15 m <sup>3</sup>
provided storage volume 'V <sub>prov</sub> ' =	8.64 m <sup>3</sup>
utilisation factor =	0.94 <b>.OK</b>
required time to discharge 50% 't <sub>50</sub> ' =	2.64 hours
utilisation factor =	0.11 <b>.OK</b>

GENERAL DATA	
site location:	██████████ Ireland
soakaway type:	infilled pit or trench
impermeable area drained to soakaway 'A' [m <sup>2</sup> ] =	325
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] =	8.00
soakaway length 'L' [m] =	9.00
total depth from ground level 'D <sub>b</sub> ' [m] =	0.80
depth to drain invert level 'D <sub>d</sub> ' [m] =	0.40
soakaway effective depth 'D <sub>eff</sub> ' [m] =	0.40
free volume in infill aggregate [%] =	30

SOIL INFILTRATION DATA	
allowance for infiltration through soakaway base:	30%
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>psd</sub> ' [m <sup>2</sup> ] =	0.80
storage volume between 75-25% 'V <sub>p</sub> ' [m <sup>3</sup> ] =	0.05
time for water to fall from 75-25% 't <sub>p</sub> ' [min] =	65.00
soil infiltration rate 'i' [m/s] =	1.60E-05

SOAKAGE TRIAL PIT DATA	
soakage trial pit width 'W <sub>t</sub> ' [m] =	0.50
soakage trial pit length 'L <sub>t</sub> ' [m] =	1.00
total depth from ground level 'D <sub>tb</sub> ' [m] =	0.80
depth to pipe invert level 'D <sub>ip</sub> ' [m] =	0.60
soakage trial pit effective depth 'D <sub>teff</sub> ' [m] =	0.20
free volume in infill aggregate [%] =	100

NOTE: faces of excavation assumed to be vertical

Infiltration rate: Good – Seasonal high water table noted at 1.0m BGL.

REQUIRED STORAGE CAPACITY PER RAINFALL DURATION												
rainfall duration [min]	rainfall factor Z1	M5-D rainfalls [mm]	M30-D			ignore		ignore			outflow from soakaway [m <sup>3</sup> ]	required storage [m <sup>3</sup> ]
			Z2	rainfalls [mm]	inflow [m <sup>3</sup> ]	Z2	rainfalls [mm]	inflow [m <sup>3</sup> ]	Z2	rainfalls [mm]		
5	0.33	5.21	1.44	9.02	2.93					0.14	2.80	
10	0.48	7.57	1.47	13.31	4.33					0.27	4.05	
15	0.58	9.14	1.48	16.24	5.28					0.41	4.87	
30	0.76	11.96	1.49	21.41	6.96					0.82	6.14	
60	1.00	15.70	1.49	28.08	9.13					1.64	7.49	
120	1.27	19.88	1.47	35.15	11.42					3.28	8.15	
240	1.63	25.53	1.46	44.67	14.52					6.55	7.96	
360	1.86	29.20	1.45	50.67	16.47					9.83	6.64	
600	2.22	34.79	1.43	59.66	19.39					16.38	3.00	
1440	3.05	47.85	1.38	79.36	25.79					39.32	0.00	

\* Z2 is a growth factor from M5 rainfalls

SOAKAGE TRIAL PIT INFILTRATION TEST RESULTS																				
water level measurement N <sup>o</sup> :		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	105																	
	depth to water [m] =	0.60	0.70																	
Soakage Trial 2	time [min] =	0	115																	
	depth to water [m] =	0.60	0.70																	
Soakage Trial 3	time [min] =	0	130																	
	depth to water [m] =	0.60	0.70																	

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: Maurice Lyons

PROJECT: Brownsbarn, Lower Baldonnell, Co. Dublin.

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

DRAWN BY:	SCALE:
	1:250
ORIGIN DATE:	DRAWING NUMBER:
24/08/2022	

FOR PLANNING PURPOSES ONLY

PROPOSED  
EFFLUENT TANK



PROPOSED  
WALLED MANURE  
AREA



99.60 FFL

PROPOSED  
LOOSE SHED



99.50 FFL

PROPOSED  
HARDCORE  
YARD

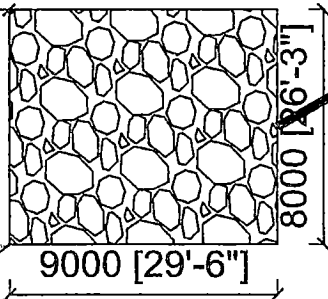


99.50 FFL

5135 [16'-10"]

17495 [57'-5"]

19150 [62'-10"]



28205 [92'-6"]



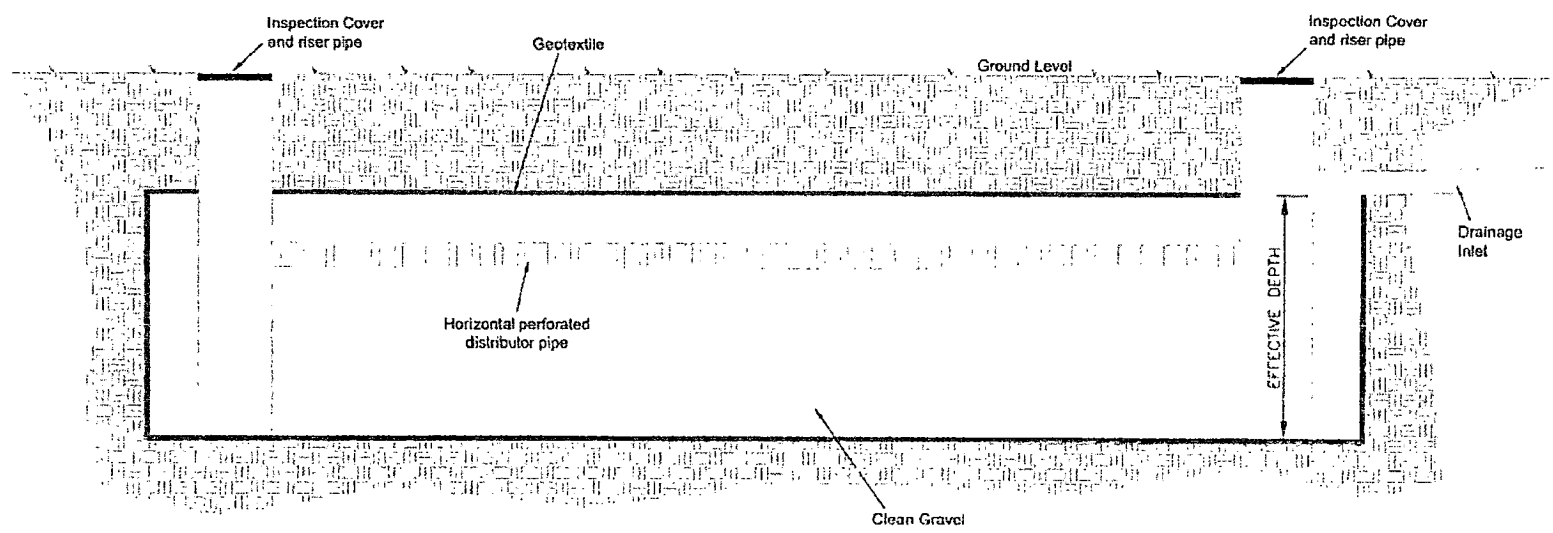
BRE digest  
365 test hole.

Min 8.15m<sup>3</sup> of free storage required.  
 9.0m x 8.0m with an effective depth  
 of 0.40m (see attached calc page).  
 Soakpit to be located min 5m from  
 any building & 3m from any boundary.

- 1. Figured Dimensions Only to be taken from this Drawing. All Dimensions to be Checked on Site.
- 2. This drawing to be read in conjunction with all other Architectural & Engineering drawings & all other relevant drawings & specifications.

### TYPICAL SOAKAWAY CROSS SECTION

Dimensions to be based on results BRE Digest 365 test



FOR INFORMATION ONLY

N/A

TYPICAL DETAILS

SOAKAWAY CROSS SECTION

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',

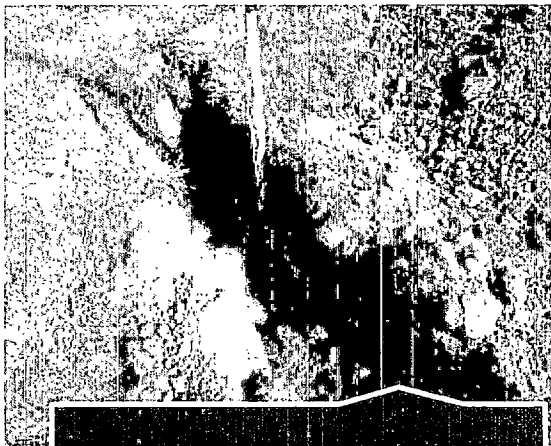
Available for download at [www.met.ie/climate/dataproducts/Estimation-of-Point-Rainfall-Frequencies\\_TN61.pdf](http://www.met.ie/climate/dataproducts/Estimation-of-Point-Rainfall-Frequencies_TN61.pdf)



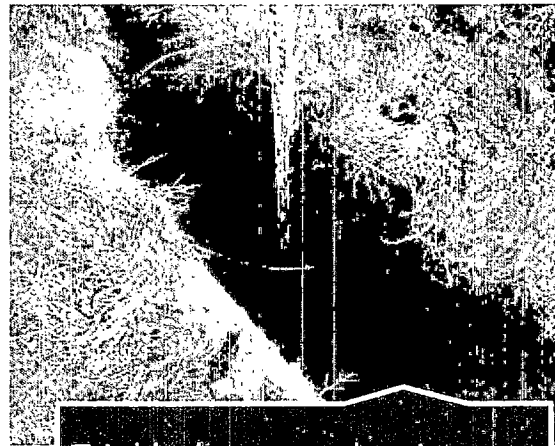
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BRE digest 365 test hole



Trial hole opened to inspect watertable level on site



Site during testing.  
Brownsbarn - 24-08-2022



You're safe with *Sound*.

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

David Ryan  
Cillron Limited  
Newtownmoyaghy  
Kilcock  
Co Meath

Date: 22/03/2022  
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>	PID00024862
<b>Insurer:</b>	Accredited Insurance (Europe) Ltd
<b>Period of Insurance:</b>	04/03/2022 to 03/03/2023
<b>Limit of Indemnity:</b>	€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](mailto:Gary@sound.ie)