



PercolationTests.ie
Planning Assessments & Land Surveys

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BRE Digest 365 Report

Prepared on behalf of:

Marie & Brian Furey

At:

**2 Orchardstown Drive,
Rathfarnham,
Dublin 14.**



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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: **1.00**

Job No: Soakpit 1 Page: C/01

Section: **2 Orchardstown Drive, Rathfarnham, Dublin14**

Prepared By: **DR** Date: **15/09/2022**

ALTERNATIVE SOAKAWAY SIZES			
trench soakaways			
width of trench [mm]:	450	600	900
required trench length [m]:	6.32	5.12	3.69
ring soakaways			
diameter of ring [mm]:	1500	2100	2400
required pit diameter [m]:	1.75	1.76	1.75

SUMMARY OF CALCULATIONS	
critical design rainfall duration 't _{crit} ' =	240 min
required storage volume 'V _{req} ' =	2.60 m ³
provided storage volume 'V _{prov} ' =	2.85 m ³
utilisation factor =	0.91 .OK
required time to discharge 50% 't ₅₀ ' =	5.86 hours
utilisation factor =	0.24 .OK

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

GENERAL DATA	
site location:	██████████ Ireland
soakaway type:	infilled pit or trench
impermeable area drained to soakaway 'A' [m ²] =	80
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] =	2.50
total depth from ground level 'D ₀ ' [m] =	1.20
depth to drain invert level 'D _c ' [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:	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 _{p50} ' [m ²] =	1.25
storage volume between 75-25% 'V _p ' [m ³] =	0.13
time for water to fall from 75-25% 't _p ' [min] =	106.67
soil infiltration rate 'f' [m/s] =	1.56E-05

SOAKAGE TRIAL PIT DATA	
soakage trial pit width 'W _t ' [m] =	0.50
soakage trial pit length 'L _t ' [m] =	1.00
total depth from ground level 'D _{th} ' [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

Infiltration Rate: Very Good – No mottling noted above 1.2m BGL.

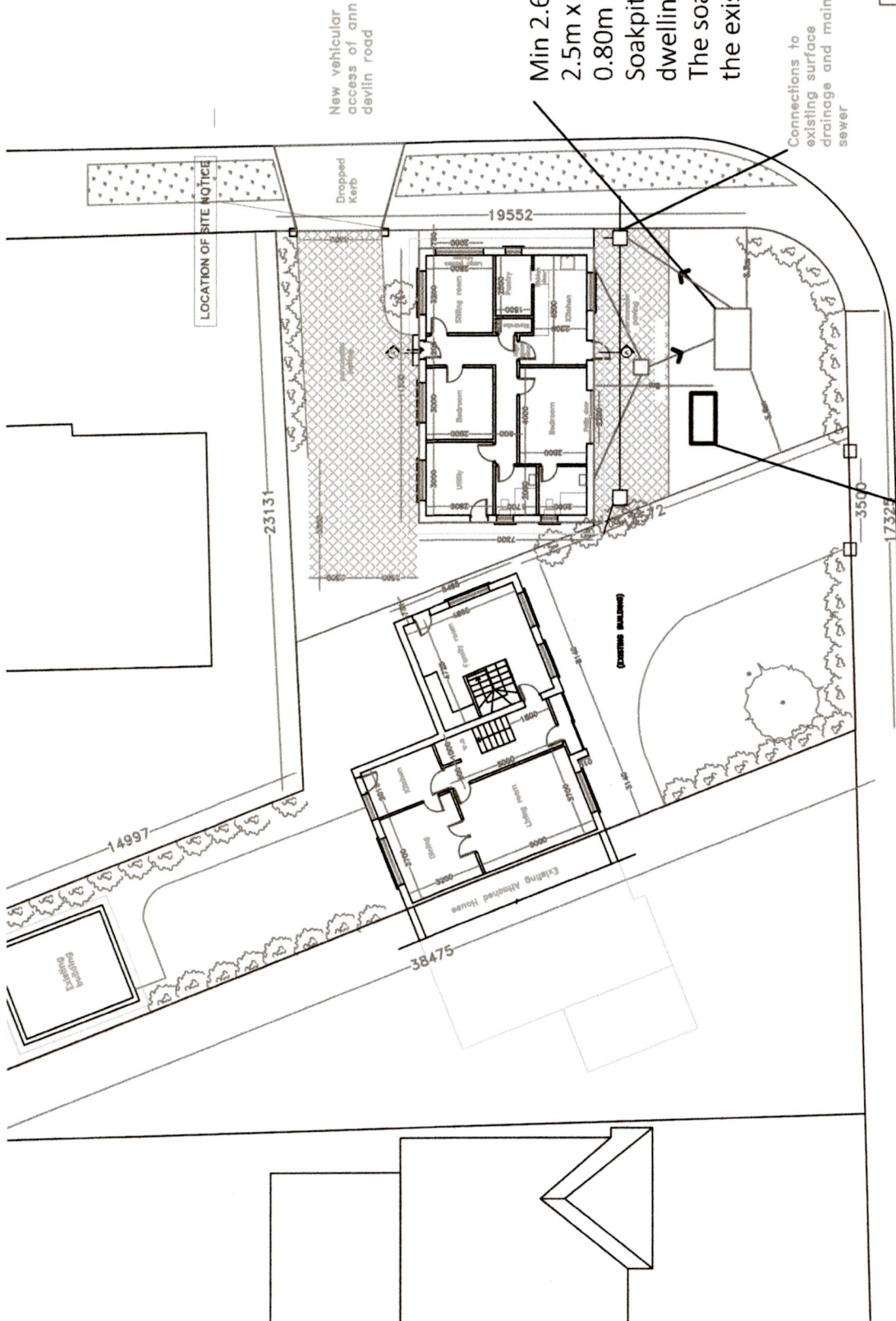
REQUIRED STORAGE CAPACITY PER RAINFALL DURATION													
rainfall duration [min]	rainfall factor Z1	M5-D rainfalls [mm]	M30-D			ignore			ignore			outflow from soakaway [m ³]	required storage [m ³]
			Z2	rainfalls [mm]	inflow [m ³]	Z2	rainfalls [mm]	inflow [m ³]	Z2	rainfalls [mm]	inflow [m ³]		
5	0.33	5.21	1.44	9.02	0.72						0.02	0.70	
10	0.48	7.57	1.47	13.31	1.06						0.04	1.02	
15	0.58	9.14	1.48	16.24	1.30						0.06	1.24	
30	0.76	11.96	1.49	21.41	1.71						0.12	1.59	
60	1.00	15.70	1.49	28.08	2.25						0.24	2.00	
120	1.27	19.88	1.47	35.15	2.81						0.49	2.33	
240	1.63	25.53	1.46	44.67	3.57						0.97	2.60	
360	1.86	29.20	1.45	50.67	4.05						1.46	2.59	
600	2.22	34.79	1.43	59.66	4.77						2.43	2.34	
1440	3.05	47.85	1.38	79.36	6.35						5.84	0.51	

* Z2 is a growth factor from M5 rainfalls

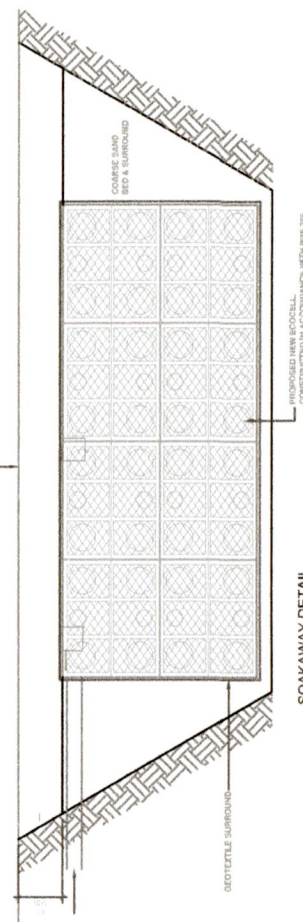
SOAKAGE TRIAL PIT INFILTRATION TEST RESULTS																				
water level measurement N°:		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Soakage Trial 1	time [min] =	0	95																	
	depth to water [m] =	0.80	1.10																	
Soakage Trial 2	time [min] =	0	104																	
	depth to water [m] =	0.80	1.10																	
Soakage Trial 3	time [min] =	0	128																	
	depth to water [m] =	0.80	1.10																	

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		FOR PLANNING PURPOSES ONLY	



Min 2.60m³ storage required.
 2.5m x 1.5m with an effective depth of
 0.80m (see attached calc page).
 Soakpit to be located min 5m from any
 dwelling & 3m from any boundary.
 The soakpit shall include an overflow to
 the existing SW drainage.



Example cross section not to scale.

BRE digest 365
test hole.