

Structure&Design Service LTD

Site address:

Blaenau Uchaf

Froncyclyte

Nr Llangollen

LL20 7RY

Percolation test carried out: 04 August 2022 & 05 August 2022

Percolation test evidence:

04 08 2022

x2 holes were excavated, hole sizes are 300mm x 300mm x 600mm (invert level 300mm below the surface). The holes were both filled with water and left overnight to seep away.



Existing Septic tank location

Percolation holes

(Existing septic tank location & x2 percolation holes)



(300 x 300 x 600mm holes)



(300 x 300 x 600mm holes)



(Hole 1 – 600mm below ground)



(Hole 2 – 630mm below ground)

05 August 2022

Outside temperature 17 degrees, dry with sunny intervals

Both excavated holes were filled to 300mm from the bottom with water, the timer stated when the water level reached 225mm and ended when the water had seeped away to 75mm (150mm of fall = 50%).



(evidence of "Hole 1" test)



(evidence of "Hole 2" test)

Both holes were tested 3 times during 05 August 2022, the testing sequence was repeated as described above.

Location	Time taken to seep 150mm
Hole 1	3031
Hole 1	3068
Hole 1	2998
Average: 3065 seconds	

Location	Time taken to seep 150mm
Hole 2	3210
Hole 2	3188
Hole 2	3245
Average: 3214 seconds	

Formula for calculating (Vp) - (average time / 150) = Vp

Hole 1 Vp = 3065 / 150 = 20.43

Hole 2 Vp = 3214 / 150 = 21.42

Average: **20.925**

Water treatment tank drainage field calculation

Formula $A = p \times Vp \times 0.25$

A = Area required for drainage field (m2)

P = number of people served by the treatment tank (11 persons as the proposed building is a group of "4 + 3" bedroom houses which is 11 persons using the NRW guidelines)

Vp = Percolation value (calculated above)

0.25 = Septic tank multiplier

Calculation

$A = (11 \times 20.925 \times 0.25) = \mathbf{57.54\ m^2}$

Minimum drainage field for the water treatment plant is = 57.54 m2

Existing drainage field area for the septic tank is: 14.07m x 16.18m = 226.52 m2

Reference drawing "1067"

Summary:

The VP figure generated from completing both percolation tests MUST be between 15 – 100, I have taken a screen shot from the "national resources Wales" guidance on pollution prevention document below, I have highlighted the areas which concern the VP figures in red. The VP for Blaenau Uchaf is **20.925**, so comfortably within the required guidelines.

Drainage field required area for 11 persons septic tank with a VP of 20.925 is **57.54 m2**, the existing drainage field for the septic tank is **226m2**, this clearly shows that the drainage field is suitable for the additional load from the proposed dwelling, I have highlighted the information relating to drainage fields from the National resources Wales "pollution prevention" document in yellow below.

Appendix A: Percolation Test

Avoid carrying out this test in extreme weather conditions such as drought, frost and heavy rain.

- a) Excavate at least two (three in Northern Ireland) holes 300mm square to a depth 300mm below the proposed invert level (bottom of pipe) of the infiltration pipe and space them evenly along the proposed line of the subsurface irrigation system.
- b) Fill each hole with water to a depth of at least 300mm and allow to seep away overnight.
- c) Next day, refill each hole with water to a depth of at least 300mm and observe the time in seconds for the water to seep away from 75% full to 25% full (i.e. a depth of 150mm).
- d) Divide this time by 150. This answer gives the average time in seconds (V_p) required for the water to drop 1mm.
- e) The test should be carried out at least three times with at least two trial holes. The average figure from the tests should be taken. This is the percolation value V_p (in seconds).
- f) The average figure for the percolation value (V_p) is obtained by summing all the values and dividing by the number of values used.

- g) Drainage field disposals should only be used when percolation tests indicate average values of V_p between 15 and 100 and the preliminary assessment of the trial hole tests has been favourable.
- h) The minimum value of 15 ensures that untreated effluent cannot percolate too rapidly into ground water.
- i) Where V_p is above the limit of 100 effective treatment is unlikely to take place in a drainage field as there will be inefficient soakage in this location which may lead to sewage ponding on the surface.

j) For domestic premises, the floor area of the drainage field (A in square metres) required may be calculated from:

$A = p \times V_p \times 0.25$ for septic tanks

$A = p \times V_p \times 0.20$ for package sewage treatment plants where:

'p' is the number of people served by the tank (this should be the maximum number of people that could live in the house).

V_p is the percolation value described above.

If in doubt, consult your professional advisor or local authority **building** standards/ building control officer for advice.