KEYTECH DEVELOPMENT DESIGN LTD

The Nook
Stanley Moss Lane

POROSITY TEST
SOIL INFILTRATION RATE
SOAK-A-WAY SIZE

JULY 2020

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The Nook

POROSITY TEST RESULTS TO BRE DIGEST 365

Date of test 22, 23, 24th-07-20

Date of test 22-07-20

TEST 1

TRIAL PIT 1

Trial pit excavated 1.80m long x 0.6m wide x 2.0m deep filled with 1.00m depth of water.
Trial pit was tested 3 times on 3 separate days.
Results as below:-

Time	Water level depth below ground (m)
0	1.00
30	1.21
60	1.32
90	1.43
120	1.52
150	1.61
180	1.70
210	1.78
270	1.86
330	1.94
390	2.00

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Date of test 23-07-20

TEST 2

TRIAL PIT 1

Trial pit excavated 1.80m long x 0.6m wide x 2.0m deep filled with 1.00m depth of water.
Trial pit was tested 3 times on 3 separate days.
Results as below:-

Time	Water level depth below ground (m)
0	1.00
30	1.20
60	1.30
90	1.40
120	1.49
150	1.58
180	1.67
210	1.76
270	1.84
330	1.90
390	1.96
420	1.99 empty

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Date of test 24-07-20

TEST 3

TRIAL PIT 1

Trial pit excavated 1.80m long x 0.6m wide x 2.0m deep filled with 1.00m depth of water.
Trial pit was tested 3 times on 3 separate days.
Results as below:-

Time	Water level depth below ground (m)
0	1.00
30	1.19
60	1.26
90	1.43
120	1.49
150	1.55
180	1.61
210	1.67
270	1.76
330	1.85
390	1.92
450	1.99 empty

The test results for Test 3 are the worst case scenario

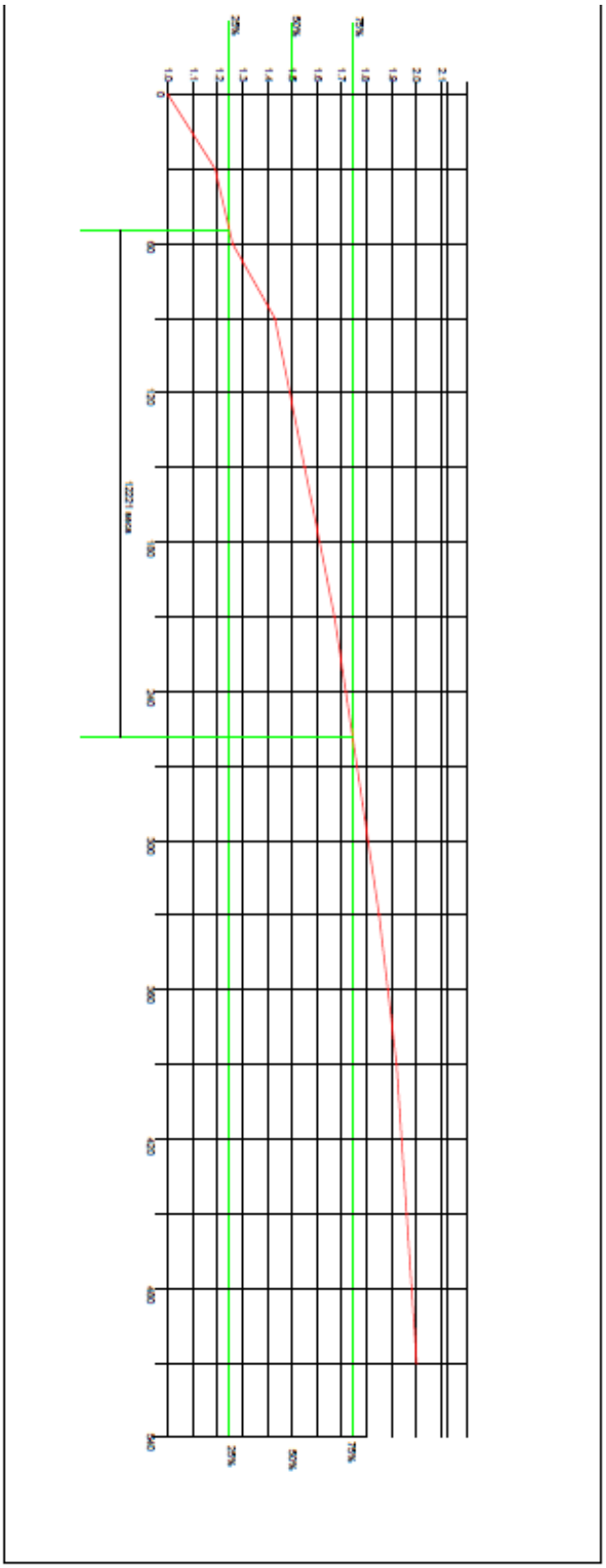
Test 1 took 390minutes to drain to empty

Test 2 took 420 minutes to drain to empty

Test 3 took 450 minutes to drain to empty

Therefore test 3 results to be used

Graph for test 3 test results



Trial Pit 1 was 1.9m long x 0.6m wide x 1.9m deep
Volume of outflow based on 75% to 25% maximum water depth
V= 2.0 x 0.6 x (0.7425 – 0.2475)
V= 0.594m^3

Maximum surface through which outflow occurs = pit sides x 50% maximum depth x base of pit
=(2.0 x 0.495)2 + (0.6 x 0.495)2 + (2.0 x 0.6)

=3.774m^2

from graph time = 203.7mins (12221secs)

$$\int = \frac{0.594}{3.774 \times 12221}$$

1.288 x 10^{-5}m/sec

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1.00 Summary

1.01 Porosity testing was carried out at the above development site on Thursday 23rd July 2020 to determine whether ground conditions are suitable for surface water disposal via soak-a-way techniques.

1.02 Two trial pits were excavated dimensions as above the material encountered was sand after approximately 200mm of top soil.

1.03 The porosity test and subsequent calculations indicate that the soil infiltration rate is 1.288×10^{-5}m/sec

1.04 Generally speaking if the soil infiltration rate is 10^{-6} or less then the ground is suitable for soak-a-ways techniques.

1.05 It is therefore concluded that soak-a-ways are a suitable means of surface water disposal at the above site.

1.06 The typical soak-a-way was sized using MicroDrainage source control software.