



KEYTECH DEVELOPMENT DESIGN LTD

Gorsty Hill Farm
Teian

February 2024

SURFACE WATER INFILTRATION TEST RESULTS TO BRE DIGEST 365

Date of tests: 23.02.24

Three tests were undertaken on site, in accordance with BRE Digest 365.

TRIAL PIT – OBSERVATIONS

The trial pit was excavated to 2.0m long x 0.47m wide x 2m deep filled with water 0.8m below ground level for all tests.

Trail Pit							
2.0m X 0.47m X 2mDeep							
Mins	Depth Below Ground		Mins	Depth Below Ground		Mins	Depth Below Ground
Test 1			Test 2			Test 3	
23.02.24			23.02.24			23.02.24	
0	0.80		0	0.80		0	0.80
5	0.95		5	0.93		5	0.90
10	1.10		10	1.00		10	1.00
15	1.18		15	1.05		15	1.04
30	1.32		30	1.15		30	1.12
45	1.47		45	1.25		45	1.15
60	1.62		60	1.35		60	1.18
75	1.87		75	1.45		75	1.22
90	EMPTY		90	1.55		90	1.26
			105	1.65		105	1.29
			120	1.75		120	1.32
			135	1.85		135	1.35
			150	1.95		150	1.39
			165	Empty		180	1.44
						210	1.49
						240	1.54
						270	1.59
						300	1.64
						330	1.69
						360	1.74
						390	1.79
						420	1.84
						450	1.89
						480	1.94
						510	Empty

TRIAL PIT 1- CALCULATIONS

Trial Pit was 2m long x 0.47m wide x 2m deep

TEST 1

DEPTH OF WATER = 2.0-0.80=1.2m

75% Effective Depth=1.700

25% Effective Depth= 1.100

75% - 25% Effective Depth = 0.600m

Volume of outflow based on 75% to 25% effective depth (0.600m)

$$V = 2.0 \times 0.47 \times (1.700 - 1.100) \quad \underline{V = 0.564\text{m}^3}$$

Maximum surface through which outflow occurs = pit sides x 50% effective depth + base of pit
 $= (2.0 \times 0.600)2 + (0.47 \times 0.600)2 + (2.0 \times 0.47) \quad \underline{= 3.904\text{m}^2}$

From graph time = 55mins (3300 Secs)

$$J = \frac{0.564}{3.904 \times 3300} \quad \underline{= 4.3777 \times 10^{-5} \text{ m/sec}}$$

TEST 2

DEPTH OF WATER = 2.0-0.80=1.2m

75% Effective Depth=1.700

25% Effective Depth= 1.100

75% - 25% Effective Depth = 0.600m

Volume of outflow based on 75% to 25% effective depth (0.600m)

$$V = 2.0 \times 0.47 \times (1.700 - 1.100) \quad \underline{V = 0.564\text{m}^3}$$

Maximum surface through which outflow occurs = pit sides x 50% effective depth + base of pit
 $= (2.0 \times 0.600)2 + (0.47 \times 0.600)2 + (2.0 \times 0.47) \quad \underline{= 3.904\text{m}^2}$

From graph time = 90mins (5400 Secs)

$$J = \frac{0.564}{3.904 \times 5400} \quad \underline{= 2.675 \times 10^{-5} \text{ m/sec}}$$

TEST 3

DEPTH OF WATER = 2.0-0.80=1.2m

75% Effective Depth=1.700

25% Effective Depth= 1.100

75% - 25% Effective Depth = 0.600m

Volume of outflow based on 75% to 25% effective depth (0.600m)

$$V = 2.0 \times 0.47 \times (1.700 - 1.100) \quad \underline{V = 0.564\text{m}^3}$$

Maximum surface through which outflow occurs = pit sides x 50% effective depth + base of pit
 $= (2.0 \times 0.600)2 + (0.47 \times 0.600)2 + (2.0 \times 0.47) \quad \underline{= 3.904\text{m}^2}$

From graph time = 310mins (18600 Secs)

$$J = \frac{0.564}{3.904 \times 18600} \quad \underline{= 7.767 \times 10^{-6} \text{ m/sec}}$$

Foul Infiltration Test

Test 1

Foul pit – sump = $0.3 \times 0.3 \times 0.3 = 27\text{LTS}$

Time taken to infiltrate from 75%-25% depth = 24mins40secs

1480 seconds / 150 = VP rate of 9.86 seconds

Test 2

Foul pit – sump = $0.3 \times 0.3 \times 0.3 = 27\text{LTS}$

Time taken to infiltrate from 75%-25% depth = 32mins31secs

1951 seconds / 150 = VP rate of 13 seconds

Test 3

Foul pit – sump = $0.3 \times 0.3 \times 0.3 = 27\text{LTS}$

Time taken to infiltrate from 75%-25% depth = 33mins25secs

2005 seconds / 150 = VP rate of 13.36 seconds

1.00 Summary

- 1.01 Infiltration testing was undertaken at the above development to determine whether ground conditions are suitable for surface water disposal via infiltration techniques.
- 1.02 A trial pit was excavated to the dimensions indicated.
- 1.03 Testing was undertaken on 23.02.24
- 1.04 Three tests were undertaken in the Trial Pit. The third test infiltrated fully, with an infiltration rate of 7.767 x 10⁻⁶ m/sec. This infiltration rate will be used for the purposes of sizing appropriate infiltration infrastructure for the proposed development for the building in the location of the Trial Pit.

Prepared By

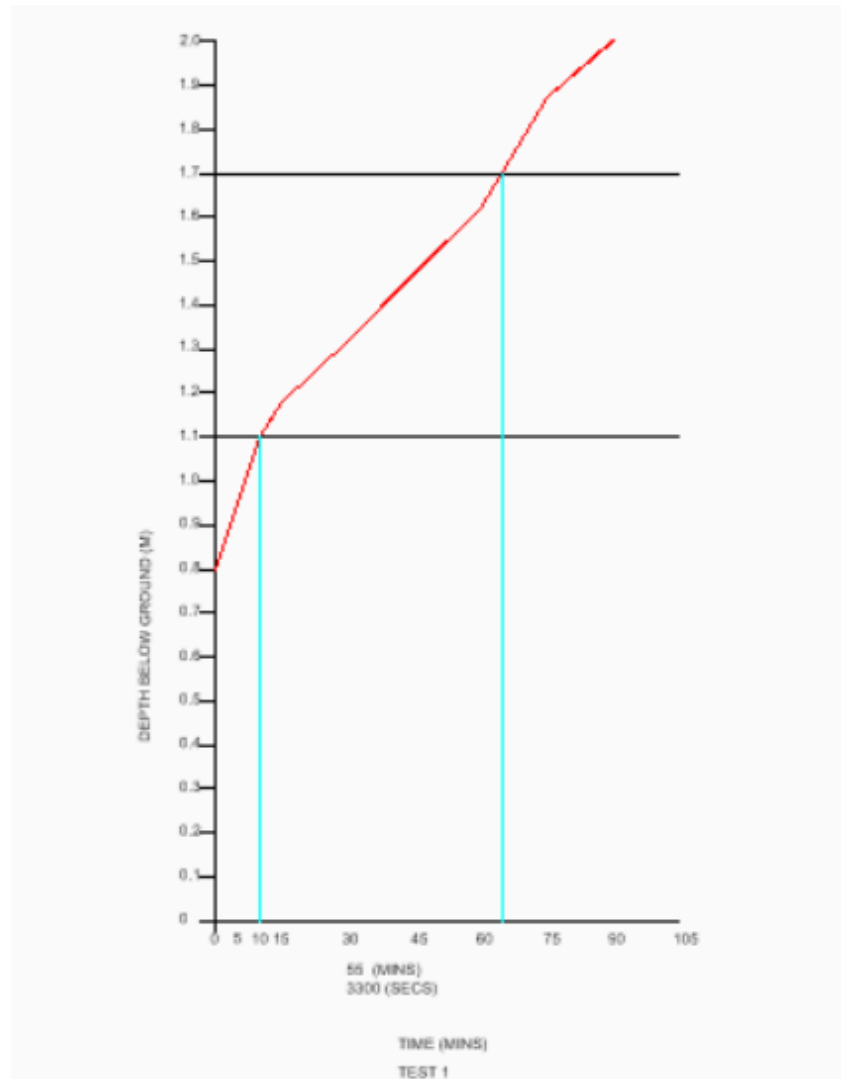


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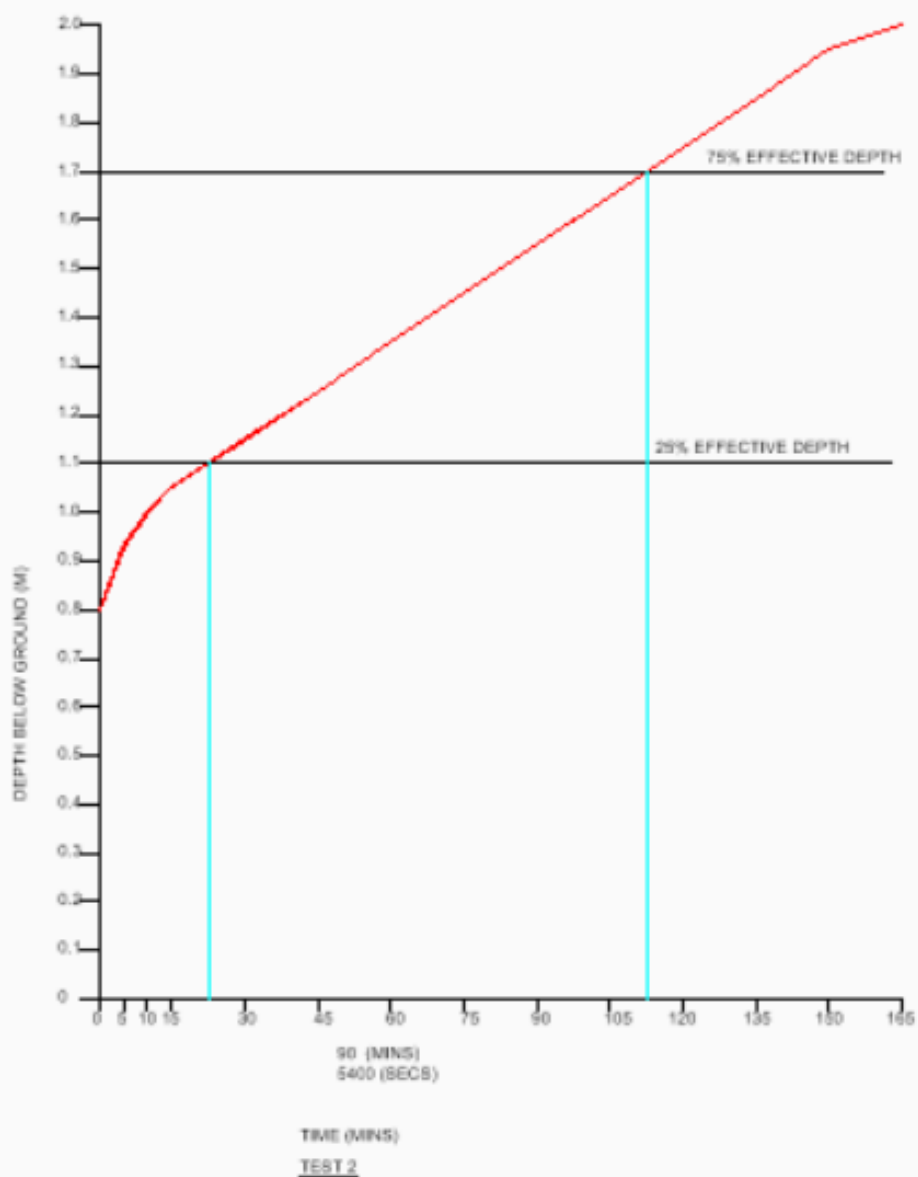
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INFILTRATION GRAPHS





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