

Hi Rebecca,

Please see below and attached response from our consultant on to the comments from KCC.

our calcs to determine the infiltration rate as requested by KCC is as follows:

We used the falling head test information provided to us (attached pdf) which had the following results:

Borehole 2 – test 1 = $1.7 \times (10^{-3})$ m/s

Borehole 2 – test 2 = $1.6 \times (10^{-3})$ m/s

Borehole 1 – test 1 = $4.3 \times (10^{-4})$ m/s

Converting these into m/hr requires conversion from seconds to hours, ie $60 \times 60 = 3600$, therefore:

Borehole 2 – test 1 = $3600 \times (1.7 \times (10^{-3}) \text{ m/s}) = 6.12 \text{ m/hr}$

Borehole 2 – test 2 = $3600 \times (1.6 \times (10^{-3}) \text{ m/s}) = 5.76 \text{ m/hr}$

Borehole 1 – test 1 = $3600 \times (4.3 \times (10^{-4}) \text{ m/s}) = 1.548 \text{ m/hr}$

We decided to use the information from borehole 1 to give the 'worst case scenario' for infiltration rates ie the lowest rate from the tests.

We used Causeway FLOW for the drainage calculations, the program uses infiltration rates in metres an hour (m/hr) whereas the test information is in metres a second (m/s). FLOW has a BRE 365 Soil Infiltration Rate Calculator to work out the infiltration rate. The borehole tested was 8.22m deep and 0.15m diameter. For the infiltration values we used the calcs with the following details as shown in the soakaway test report for borehole 1, these are as follows:

Effective storage vol between 75% and 25% = 0.1 m^3 (this was 0.07 m^3 but the program only goes down to 0.1)

Internal surface area up to 50% of trial pit = 1.954 m^2

Time for the water level to fall from 75% to 25% = 0.108hrs (390 seconds)

Infiltration coefficient (m/hr) = 0.47386

BRE 365 Soil Infiltration Rate Calculator

Effective storage volume of water in the trial pit between 75% and 25% effective depth (m^3)

0.100

OK

Internal surface area of the trial pit up to 50% effective depth and including the base area (m^2)

1.954

Cancel

Time for the water level to fall from 75% to 25% effective depth (hrs)

0.108

Calc

Infiltration Coefficient (m/hr)

0.47386

We trust this clarifies and KCC can remove their objection.

Kindest Regards

Richard Bailey