

Date 17 August 2020

Ref : BR/219/18/PL

RE: 9 Westloats Lane, Bognor Regis, West Sussex

As discussed with Sarah Burrow

Trial borehole excavated 21,12,2018

21,12,2018	800mm below ground level
08,01,2019	800mm below ground level
14,01,2019	820mm below ground level
30,01,2019	860mm below ground level
06,02,2019	880mm below ground level
13,02,2019	900mm below ground level
25,02,2019	920mm below ground level
07,03,2019	925mm below ground level
25,03,2019	935mm below ground level

Trial pit excavated 23,03,2019

1100mm long x 500mm wide x 800mm deep

Test 1 drain time 302mins

Test 2 drain time 336 mins

Test 3 Carried out on 24,03,2019 no water

Water level at 800mm deep	0 minutes
Water level at 600mm deep	48 mins
Water level at 200mm deep	420 mins

Soil infiltration rate

$$f = \frac{V}{A \times t}$$
$$f = \frac{0.22}{1.83 \times (372 \times 60)}$$

$$f = 5.39 \times 10^{-6}$$

Soakaway design

From the tables $20\text{mm} \times z1 = 20 \times 2.28 = 45.6$ $\times z2 = 45.6 \times 1.24 = 56.6\text{mm}$

Inflow = impermeable area $\times$ rainfall (100 year storm 24 hour duration) (56.6mm)

Roof area = plan area $\times$ 1.29 = $148 \times 1.29 = 190 \text{ m}^2$

Inflow = $190 \times 0.0566 = 10.75 \text{ m}^3$

Outflow assume soakaway size 11.5m x 1.5m x 0.4m deep
 11.5m x 1.5m x 0.4m deep
 Link 2.5m x 1m x 0.4m deep

Outflow = 50% surface area $\times$ percolation $\times$ duration

Out flow = $(11.5 + 10 + 1.5 + 1.5 \times 0.2) + (11.5 + 10.0 + 1.5 + 1.5 \times 0.2) \times 5.39 \times 10^{-6} \times$
 (1440mins $\times$ 60)

Outflow = $4.56 \text{ m}^3 \times$ factor of safety of 2 = 2.28 m^3

Inflow – outflow = $10.75 - 2.28 = 8.47 \text{ m}^3$

$8.47 \text{ m}^3 \times$ 40% extra free volume $\times$ free volume of cates @ 95%

Volume of soakaway = 12.45 m^3

Each crate has a volume of 0.20 m^3

Soakaway to be 73 crates, 11 crates long 11m $\times$ 3 cates wide 1.5m $\times$ 1 crate deep 0.4m $\times$ 2 + 7
 crates linking soakaways and infills

Check half drain time for 10 year storm

$$t_{s50} = \frac{s \times 0.5}{a_{s50} \times f}$$

$$= \frac{4.7 \times 0.5}{9.6 \times 5.39 \times 10^{-6}}$$

=12.6 hours drain time