

Date 17th July 2020

Ref : BR/219/18/PL

RE: 9 Westloats Lane, Bognor Regis, West Sussex

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

Inflow = impermeable area x rainfall (10 year storm 1 hour duration) (24.8mm)

Roof area = plan area x 1.29 = 148 x 1.29 = 190 m²

Inflow = 190 x 0.0248 = 4.7 m³

Inflow = impermeable area x rainfall (100 year storm 6 hour duration) (55mm)

Roof area = plan area x 1.29 = 148 x 1.29 = 190 m²

Inflow = 190 x 0.055 = 10.45 m³

Outflow assume soakaway size	11.5m x 1.0m 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 x percolation x duration

Out flow = (11.5 + 10 + 1.0 + 1.0 x 0.2) + (11.5 + 10.0 + 1.5 + 1.5 x 0.2) x 5.39 x 10⁻⁶ x (360 x 60mins)

Outflow = 1.12 m³

Inflow – outflow = 10.45 – 1.12 = 9.33m²

9.33 m³ x 30% extra free volume x free volume of cates @ 95%

Volume of soakaway = 12.73 m³

Each crate has a volume of 0.20 m³

Soakaway to be 63 crates, 23 crates long 11.5m x 1 crates wide 1.0m and 1 crates deep 0.4m + 11 crates long 11m x 3 crates wide 1.5m x 1 crate deep 0.4m + 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