

PEAK FLOW DRAINAGE CALCULATIONS

PROPOSED NEW DWELLINGS LAND OFF BLACKTHORN DRIVE BARROW

FOR

MR & MRS C BALL

4TH OCTOBER 2021

Calculations based on Colebrook-White equation, BS EN 752-4 and BS EN12056-2

To be read in conjunction with drawing number 1189 – 1 – 104.

1. FOUL DRAINAGE

Frequency Factor $k = 0.5$

Discharge Units per Dwelling:

Wash basin	$0.3 \times 3 = 0.9$
Shower	$0.4 \times 2 = 0.8$
Bath	$1.3 \times 2 = 2.6$
Kitchen sink	$1.3 \times 2 = 2.6$
Wash mach.	$0.6 \times 1 = 0.6$
W.C.	$1.7 \times 3 = 5.1$

Total per dwelling = 12.6 (DU)

$$Q = 0.7\sqrt{\sum DU}$$

$$Q = 0.7\sqrt{12.6} = 2.48$$

Discharge per dwelling = 2.48l/s

Total foul water discharge = $2.48 \times 2 = 4.96$ l/s

2. SURFACE WATER DRAINAGE

Calculations based on a rainfall intensity of 60mm/hr = 0.017l/s per square metre.

a. Roof run off

$$\begin{aligned} \text{House type 1 area} &= (11.90 \times 12.68) + (1.50 \times 2.94) = 155.30\text{m}^2 \\ \text{House type 1 garage area} &= 8.00 \times 9.76 = 78.08\text{m}^2 \\ \text{Total area} &= 233.38\text{m}^2 \end{aligned}$$

$$\text{flow rate} = 233.38 \times 0.017 = 3.97\text{l/s}$$

$$\begin{aligned} \text{House type 2 area} &= (10.90 \times 12.68) + (1.50 \times 2.94) = 142.62\text{m}^2 \\ \text{House type 2 garage area} &= 8.00 \times 8.44 = 67.52\text{m}^2 \end{aligned}$$

$$\text{Total area} = 210.14\text{m}^2$$

$$\text{flow rate} = 210.14 \times 0.017 = 3.57\text{l/s}$$

b. Driveway / patio / footpath run off

$$\text{House type 1 area} = 189.20\text{m}^2$$

$$\text{House type 1 area} = 136.25\text{m}^2$$

$$\text{Total area} = 325.45$$

$$\text{flow rate} = 325.45 \times 0.017 = 5.53\text{l/s}$$

c. Private road run off

$$\text{area} = 131\text{m}^2$$

$$\text{flow rate} = 131 \times 0.017 = 2.23\text{l/s}$$

$$\text{Total surface water run off} = 3.57 + 5.53 + 2.23 = 11.33\text{l/s}$$