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PEAK FLOW DRAINAGE CALCULATIONS – PRELIMINARY ISSUE

**PROPOSED NEW DWELLINGS
BLACK HORSE
PIMLICO ROAD
CLITHEROE**

FOR

MR D GILES

2ND NOVEMBER 2022

Introduction

These calculations have been prepared to address condition no. 7 of planning approval 3/2022/0148 dated 30th August 2022. The proposed development is for the conversion of the original public house and construction of new cottages, to create 6no self contained dwelling units.

Drainage calculations have been prepared for the existing rainwater run off from the car park and patio areas, and the foul water installations for the original pub.

Detailed calculations have been prepared for the proposed rainwater run off and the foul water installations.

The final results for each calculation have been compared to assess the impact of the proposals on the existing mains sewer.

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

To be read in conjunction with drawing number 1394 - 01.

1. EXISTING FOUL DRAINAGE

Discharge Units for domestic sanitary installation in pub flat:
Frequency Factor $k = 0.5$

Wash basin	0.3×1	$= 0.3$
Shower	0.4×1	$= 0.4$
Bath	1.3×1	$= 1.3$
W.C.	1.7×1	$= 1.7$
Kitchen sink	1.3×1	$= 1.3$
Wash mach.	0.6×1	$= 0.6$
		$= 5.6$

Discharge units = 5.6 (DU)

$$Q = 0.5\sqrt{\sum DU}$$

$$Q = 0.5\sqrt{5.6} = 1.18 \text{ l/s}$$

Discharge Units for commercial area:
Frequency Factor $k = 0.7$

Wash basins	$0.3 \times 5 = 1.5$
Urinals	$0.2 \times 1 = 0.2$
W.C.	$1.7 \times 3 = 5.1$
Kitchen sink	$1.3 \times 1 = 1.3$
Bar sink	$1.3 \times 1 = 1.3$
Dishwasher	$0.2 \times 1 = 0.2$
Glasswasher	$0.2 \times 1 = 0.2$
	$= 9.8$

Discharge units = 9.8 (DU)

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

$$Q = 0.7\sqrt{9.8} = 2.19 \text{ l/s}$$

Total foul water discharge = $1.18 + 2.19 = 3.37 \text{ l/s}$

2. EXISTING SURFACE WATER DRAINAGE

Calculations based on a rainfall intensity of $60 \text{ mm/hr} = 0.017 \text{ l/s}$ per square metre.

a. Roof run off

$$\text{Roof area} = (11.90 \times 10) + (3.47 \times 3.70) + (8.00 \times 3.50) = 171.74 \text{ m}^2$$

$$\text{flow rate} = 171.74 \times 0.017 = 2.92 \text{ l/s}$$

b. Carpark / patio run off

$$\text{car park / patio area} = 179.34 + 181.00$$

$$\text{flow rate} = 360.34 \times 0.017 = 6.13 \text{ l/s}$$

Total surface water run off = $2.92 + 6.13 = 9.05 \text{ l/s}$

3. PROPOSED FOUL DRAINAGE

Discharge Units for domestic sanitary installation to 6no dwellings:
Frequency Factor $k = 0.5$

Wash basin	0.3×11	$= 3.3$
Shower	0.4×6	$= 2.4$
Bath	1.3×5	$= 6.5$
W.C.	1.7×10	$= 17.0$
Kitchen sink	1.3×6	$= 7.8$
Wash mach.	0.6×6	$= 3.6$
Dishwasher	0.2×6	$= 1.2$
		$= 41.8$

Discharge units = 41.8 (DU)

$$Q = 0.5\sqrt{\Sigma DU}$$

$$Q = 0.5\sqrt{41.8} = 3.23 \text{ l/s}$$

Total foul water discharge = **3.23 l/s**

4. PROPOSED SURFACE WATER DRAINAGE

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

a. Roof run off

$$\text{Roof area} = 2(26.47 \times 5.00) = 264.70 \text{ m}^2$$

$$\text{flow rate} = 264.70 \times 0.017 = 4.51 \text{ l/s}$$

b. Carpark / patio run off

$$\text{car park / patio area} = 255.48$$

$$\text{flow rate} = 255.48 \times 0.017 = 4.34 \text{ l/s}$$

Total surface water run off = 4.50 + 4.34 = **8.85 l/s**