

STRUCTURAL CALCULATIONS

Using
MASTERSERIES POWERPAD

Land at Pant Howell

Briton Ferry
Neath

STRUCTURAL ENGINEERS **SLOWIKOWSKI, BLACKSHAW AND PARTNERS**

The Maltings, East Tyndall Street
Cardiff Bay, Cardiff CF24 5EA
Tel : 029 2045 1331 Fax : 029 2045 1344

PROJECT No: GOA/A/2057

July 2018

Slowikowski, Blackshaw and Partners

The Maltings, East Tyndall Street
Cardiff Bay, Cardiff CF24 5EA
Tel : 029 2045 1331

Fax : 029 2045 1344

Job ref : GOA/A/2057
Sheet : / 2 -
Made By :
Date : Jul 2018/ Version 2015.04
Checked :
Approved :

Drainage Design

Surface water

Hydraulic Design based on the Modified Rational Method

Data

Total site area 1410m²

Impermeable area 775m²

Rainfall data for 30mins duration

$C_v = 0.75$

$C_R = 1.30$

ARF = 1.00

Imp Area [ha] = 0.0775

$r = 0.22$

M5-60 = 20mm

T = 1 yr

$Z_1 = 0.72$

M5-30 = 14.40mm

Z_2 for M1 = 0.62

M10 = 1.24

M50 = 1.70

M1-30 = $0.62 \times 14.40 = 8.92\text{mm}$

M10-30 = $1.24 \times 14.40 = 17.85\text{mm}$

M50-30 = $1.70 \times 14.40 = 24.48\text{mm}$

Average $I_5 = 8.92/0.5 = 17.84\text{mm/hr}$

$17.85/0.5 = 35.70\text{mm/hr}$

$24.48/0.5 = 48.96\text{mm/hr}$

Design flow [M1] = $1.67 \times 17.84 \times 0.0775 = 1.45\text{l/s}$

[M10] = $3.33 \times 35.70 \times 0.0775 = 5.77\text{l/s}$

[M50] = $4.52 \times 48.96 \times 0.0775 = 10.66\text{l/s}$

Pipework Roughness value k_s should be 0.6mm

Slowikowski, Blackshaw and Partners

The Maltings, East Tyndall Street
Cardiff Bay, Cardiff CF24 5EA
Tel : 029 2045 1331

Fax : 029 2045 1344

Job ref : GOA/A/2057
Sheet : / 3 -
Made By :
Date : Jul 2018/ Version 2015.04
Checked :
Approved :

Climate Change

The pipework will be designed with a 30% allowance provided for rainfall intensity to account for climate change [see drg dwe /10672-A-101 building regulations]

150mm dia pipework PVC pipework laid at 1:80 velocity 1.10m/s

discharge 19.44m/s

Foul Water

Pipework Roughness value k_s should be 1.50mm

Table 6 Recommended minimum gradients for foul drains

Peak flow (litres/sec)	Pipe size (mm)	Minimum gradient (1 in ...)	Maximum capacity (litres/sec)
< 1	75	1:40	4.1
	100	1:40	9.2
> 1	75	1:80	2.8
	100	1:80*	6.3
	150	1:150†	15.0

Notes:

* Minimum of 1 WC

† Minimum of 5 WCs

The pipework will be designed for a minimum gradient of 1:80 maximum capacity 6.3l/s

Slowikowski, Blackshaw and Partners

The Maltings, East Tyndall Street
Cardiff Bay, Cardiff CF24 5EA
Tel : 029 2045 1331

Fax : 029 2045 1344

Job ref : **GOA/A/2057**
Sheet : / 4 -
Made By :
Date : **Jul 2018/ Version 2015.04**
Checked :
Approved :