

Measurements from Map

Area
m²

Total Area

248.0

=>

0.248

km²

Area's
m²

Paved Areas

128.0	
2.3	
130.3	130.3

Walls

3.8	
2.0	
0.9	
6.7	6.7

Roof

111.0	111.0
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248.0 m²

Design Calculations for Soakaway at Whitle Road

r = 0.35 M5-60 = 20 mm

Value of Factor Z1 for duration D and ratio r									
	Mins								
r	5	10	15	30	60	120	240	360	600
0.330	0.350	0.500	0.610	0.780	1.000	1.230	1.530	1.730	2.040
0.360	0.360	0.510	0.620	0.790	1.000	1.220	1.480	1.670	1.900
0.350	0.357	0.507	0.617	0.787	1.000	1.223	1.497	1.690	1.947

Growth Factor Z2			
M5 rainfall M10 Growth			
mm	England		England
5	1.19		
		7.1	1.20
10	1.22		
		10.1	1.22
15	1.24		
10	1.22		
		12.3	1.23
15	1.24		
		15.7	1.24
20	1.24	20.0	1.24
		24.5	1.24
25	1.24		
		29.9	1.22
30	1.22		
		33.8	1.21
40	1.19		
30	1.22		
		38.9	1.19
40	1.19		

mm	M5-5	M5-10	M5-15	M5-30	M5-60	M5-120	M5-240	M5-360	M5-600	
20	7.1	10.1	12.3	15.7	20.0	24.5	29.9	33.8	38.9	mm
Z2	1.20	1.22	1.23	1.24	1.24	1.24	1.22	1.21	1.19	

t	M10-5	M10-10	M10-15	M10-30	M10-60	M10-120	M10-240	M10-360	M10-600
M10-t	8.58	12.37	15.16	19.51	24.80	30.34	36.53	40.85	46.46

All tests on Saturday 23 April 2016

Size of Test Pit 0.3m x 1.8m x 1.5m deep

Excavation stopped at 1.5m due to large rock in the bottom of the pit

	Time	Time full to 75%	Time 75% to 50%	Time 50% to 25%	Time 25% to near empty
Fill 1	12:10	00:10	00:18	00:25	00:39
Fill 2	14:00	00:13	00:20	00:29	00:45
Fill 3	16:15	00:12	00:20	00:35	00:45

Volume of Trial Pit

W L D
0.3 1.8 1.5

$$V = 0.81 \text{ m}^3$$

$$V_{p75-25} = 0.405 \text{ m}^3$$

$$a_{p50} = 3.15 + 0.54 = 3.69$$

mins mins f

t_{p75-25}	Fill 1	=	00:43	43	4.25411E-05
	Fill 2	=	00:49	49	3.7332E-05
	Fill 3	=	00:55	55	3.32594E-05

0.000113133

$$\text{average} = 3.77109E-05$$

Soakaway

$$f = 3.77109\text{E-}05 \quad \text{Taking Average}$$

Total Drained Area 248 m²

t	M10-5	M10-10	M10-15	M10-30	M10-60	M10-120	M10-240	M10-360	M10-600	
	5	10	15	30	60	120	240	360	600	
M10-t	8.58	12.37	15.16	19.51	24.80	30.34	36.53	40.85	46.46	
Inflow	2.128	3.067	3.760	4.838	6.150	7.524	9.059	10.131	11.521	m ³
Inflow	7.093	5.112	4.178	2.688	1.708	1.045	0.629	0.469	0.320	l/s

Soakaway

	L		W		D		Volume		
	10.0	x	0.9	x	1.50		13.5		
a_{p50}	16.35	16.35	16.35	16.35	16.35	16.35	16.35	16.35	16.35
O	0.185	0.370	0.555	1.110	2.220	4.439	8.879	13.318	22.197 m ³
I - O	1.943	2.697	3.205	3.728	3.931	3.085	0.180	-3.187	-10.676
Storage	4.05	4.05	4.05	4.05	4.05	4.05	4.05	4.05	4.05

Check Time to Half empty

$$t_{s50} = \frac{S \times 0.5}{a_{p50} \times f}$$

$$t_{s50} = \frac{(L \times D \times W) \times 0.5}{a_{p50} \times f}$$

$$t_{s50} = \frac{12413}{\text{Secs}}$$

$$t_{s50} = \frac{206.88}{\text{Mins}}$$

$$t_{s50} = \frac{3}{27} \text{ hrs mins}$$

Volume of Aggregate 13.50 m³

Mass of Aggregate 22.95 Tonne