C2C Consulting The Old Church Offices Shelton New Road Stoke-on-Trent	Project Lask Edge Farm			Job Ref. 18378	
	Section			Sheet no./rev. 1	
	Calc. by KJ	Date 22/08/2018	Chk'd by	Date	App'd by	Date

INFILTRATION TESTING NOT YET UNDERTAKEN

Presumed infiltration rate taken from Local knowledge of ground contions (silty sandy clay over sandstone)

SOAKAWAY DESIGN

In accordance with BRE Digest 365 - Soakaway design

Tedds calculation version 2.0.03

Design rainfall intensity

Location of catchment area	Stoke
Impermeable area drained to the system	A = **231.0** m^2
Return period	Period = **30** yr
Ratio 60 min to 2 day rainfall of 5 yr return period	r = **0.360**
5-year return period rainfall of 60 minutes duration	M5_60min = **18.0** mm
Increase of rainfall intensity due to global warming	$p_{climate}$ = **0** %

Soakaway / infiltration trench details

Soakaway type	Rectangular
Minimum depth of pit (below incoming invert)	d = **1200** mm
Width of pit	w = **1500** mm
Length of pit	l = **5207** mm
Percentage free volume	V_{free} = **95** %
Soil infiltration rate	f = **10.0×10^{-6}** m/s
Wetted area of pit 50% full	a_{s50} = l × d + w × d = **8048063** mm^2

Table equations

Inflow (cl.3.3.1)	I = M30 × A
Outflow (cl.3.3.2)	O = a_{s50} × f × D
Storage (cl.3.3.3)	S = I - O

Duration, D (min)	Growth factor Z1	M5 rainfalls (mm)	Growth factor Z2	30 year rainfall, M30 (mm)	Inflow (m^3)	Outflow (m^3)	Storage required (m^3)
5	0.36	6.5	1.45	9.4	2.16	0.02	2.14
10	0.51	9.2	1.48	13.6	3.14	0.05	3.09
15	0.62	11.2	1.50	16.7	3.86	0.07	3.79
30	0.79	14.2	1.52	21.6	5.00	0.14	4.85
60	1.00	18.0	1.54	27.7	6.39	0.29	6.10
120	1.22	22.0	1.54	33.8	7.81	0.58	7.23
240	1.48	26.6	1.53	40.7	9.40	1.16	8.24
360	1.67	30.1	1.51	45.5	10.51	1.74	8.77
600	1.90	34.2	1.49	51.1	11.80	2.90	8.90
1440	2.42	43.6	1.45	63.2	14.59	6.95	7.64

Required storage volume	S_{req} = **8.90** m^3
Soakaway storage volume	S_{act} = l × d × w × V_{free} = **8.90** m^3

PASS - Soakaway storage volume

Time for emptying soakaway to half volume t_{s50} = S_{req} × 0.5 / (a_{s50} × f) = 15hr 21min 33s

C2C Consulting The Old Church Offices Shelton New Road Stoke-on-Trent	Project: Lask Edge Farm				Job Ref.: 18378	
	Section				Sheet no./rev.: 2	
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PASS - Soakaway discharge time less than or equal to 24 hours