

	Project Baker's Lane, Chartham, CT4 7QB				Job no. 301817	
	Calcs for Soakaway - Plot 9				Start page no./Revision 1	
	Calcs by MW	Calcs date 22/05/2018	Checked by PB	Checked date	Approved by	Approved date

SOAKAWAY DESIGN

In accordance with BRE Digest 365 - Soakaway design

Tedds calculation version 2.0.03

Design rainfall intensity

Location of catchment area	Other
Impermeable area drained to the system	A = 56.0 m ²
Return period	Period = 100 yr
Ratio 60 min to 2 day rainfall of 5 yr return period	r = 0.450
5-year return period rainfall of 60 minutes duration	M5_60min = 20.0 mm
Increase of rainfall intensity due to global warming	p _{climate} = 40 %

Soakaway / infiltration trench details

Soakaway type	Rectangular
Minimum depth of pit (below incoming invert)	d = 800 mm
Width of pit	w = 852 mm
Length of pit	l = 2000 mm
Percentage free volume	V _{free} = 95 %
Soil infiltration rate	f = 370. × 10⁻⁶ m/s
Wetted area of pit 50% full	a _{s50} = l × d + w × d = 2281370 mm ²

Table equations

Inflow (cl.3.3.1)	I = M100 × 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	100 year rainfall, M100 (mm)	Inflow (m ³)	Outflow (m ³)	Storage required (m ³)
5	0.39;	10.9;	1.92;	21.0;	1.18;	0.25;	0.92
10	0.54;	15.1;	1.99;	30.1;	1.69;	0.51;	1.18
15	0.65;	18.2;	2.02;	36.7;	2.05;	0.76;	1.29
30	0.82;	23.0;	2.02;	46.3;	2.59;	1.52;	1.08
60	1.00;	28.0;	1.99;	55.6;	3.11;	3.04;	0.08
120	1.19;	33.3;	1.94;	64.8;	3.63;	6.08;	0.00
240	1.38;	38.6;	1.90;	73.5;	4.11;	12.16;	0.00
360	1.51;	42.3;	1.87;	79.1;	4.43;	18.23;	0.00
600	1.68;	47.0;	1.83;	86.3;	4.83;	30.39;	0.00
1440	2.03;	56.8;	1.76;	100.2;	5.61;	72.93;	0.00

Required storage volume $S_{req} = 1.29$ m³

Soakaway storage volume $S_{act} = l \times d \times w \times V_{free} = 1.29$ m³

PASS - Soakaway storage volume

Time for emptying soakaway to half volume $t_{s50} = S_{req} \times 0.5 / (a_{s50} \times f) = 12$ min 45s

PASS - Soakaway discharge time less than or equal to 24 hours