

	Project Baker's Lane, Chartham, CT4 7QB			Job no. 301817	
	Calcs for Soakaway - Plot 13			Start page no./Revision 1	
	Calcs by MW	Calcs date 22/05/2018	Checked by PB	Checked date	Approved by

## 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 = <b>66.0</b> m <sup>2</sup>
Return period	Period = <b>100</b> yr
Ratio 60 min to 2 day rainfall of 5 yr return period	r = <b>0.450</b>
5-year return period rainfall of 60 minutes duration	M5_60min = <b>20.0</b> mm
Increase of rainfall intensity due to global warming	p <sub>climate</sub> = <b>40</b> %

#### Soakaway / infiltration trench details

Soakaway type	Rectangular
Minimum depth of pit (below incoming invert)	d = <b>800</b> mm
Width of pit	w = <b>1057</b> mm
Length of pit	l = <b>2000</b> mm
Percentage free volume	V <sub>free</sub> = <b>95</b> %
Soil infiltration rate	f = <b>370. × 10<sup>-6</sup></b> m/s
Wetted area of pit 50% full	a <sub>s50</sub> = l × d + w × d = <b>2445651</b> mm <sup>2</sup>

#### Table equations

Inflow (cl.3.3.1)	I = M100 × A
Outflow (cl.3.3.2)	O = a <sub>s50</sub> × 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 <sup>3</sup> )	Outflow (m <sup>3</sup> )	Storage required (m <sup>3</sup> )
5	0.39;	10.9;	1.92;	21.0;	1.39;	0.27;	1.12
10	0.54;	15.1;	1.99;	30.1;	1.99;	0.54;	1.44
15	0.65;	18.2;	2.02;	36.7;	2.42;	0.81;	1.61
30	0.82;	23.0;	2.02;	46.3;	3.06;	1.63;	1.43
60	1.00;	28.0;	1.99;	55.6;	3.67;	3.26;	0.41
120	1.19;	33.3;	1.94;	64.8;	4.27;	6.52;	0.00
240	1.38;	38.6;	1.90;	73.5;	4.85;	13.03;	0.00
360	1.51;	42.3;	1.87;	79.1;	5.22;	19.55;	0.00
600	1.68;	47.0;	1.83;	86.3;	5.69;	32.58;	0.00
1440	2.03;	56.8;	1.76;	100.2;	6.62;	78.18;	0.00

Required storage volume  $S_{req} = 1.61$  m<sup>3</sup>

Soakaway storage volume  $S_{act} = l \times d \times w \times V_{free} = 1.61$  m<sup>3</sup>

**PASS - Soakaway storage volume**

Time for emptying soakaway to half volume  $t_{s50} = S_{req} \times 0.5 / (a_{s50} \times f) = 14$ min 50s

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