	Project		Job no.	
vkhp-consulting civil and structural	Baker's Lane, Chartham, CT4 7QB			301817
	Calcs for		Start page no./Revision	
	Soakaway - Plot 2			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	$A = \textbf{66.0}$ m^2
Return period	Period = **100** yr
Ratio 60 min to 2 day rainfall of 5 yr return period	$r = \textbf{0.450}$
5-year return period rainfall of 60 minutes duration	$M5\_60min = \textbf{20.0}$ mm
Increase of rainfall intensity due to global warming	$p_{climate} = \textbf{40}$ %

Soakaway / infiltration trench details

Soakaway type	Rectangular
Minimum depth of pit (below incoming invert)	$d = \textbf{800}$ mm
Width of pit	$w = \textbf{1057}$ mm
Length of pit	$l = \textbf{2000}$ mm
Percentage free volume	$V_{free} = \textbf{95}$ %
Soil infiltration rate	$f = \textbf{370.}_{\times}\textbf{10}^{-6}$ m/s
Wetted area of pit 50% full	$a_{s50} = l \times d + w \times d = \textbf{2445651}$ mm^2

Table equations

Inflow (cl.3.3.1)	$I = M100 \times A$
Outflow (cl.3.3.2)	$O = a_{s50} \times f \times D$
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 (m³)	Outflow (m³)	Storage required (m³)
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	$S_{req} = \textbf{1.61}$ m^3
Soakaway storage volume	$S_{act} = l \times d \times w \times V_{free} = \textbf{1.61}$ m^3

PASS - Soakaway storage volume

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

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