	Project				Job no.	
[redacted]	Linden Park, Littlehampton				19119	
	Calcs for				Start page no./Revision	
	Surface Water drainage Soakaway				4	
	Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date
	PSG	21/11/2019				

SOAKAWAY DESIGN

In accordance with BRE Digest 365 - Soakaway design

Tedds calculation version 2.0.04

Design rainfall intensity

Location of catchment area	Brighton
Impermeable area drained to the system	A = 551.5 m^2
Return period	Period = 100 yr
Ratio 60 min to 2 day rainfall of 5 yr return period	r = 0.350
5-year return period rainfall of 60 minutes duration	M5_60min = 20.0 mm
Increase of rainfall intensity due to global warming	$p_{climate}$ = 30 %

Soakaway / infiltration trench details

Soakaway type	Rectangular
Minimum depth of pit (below incoming invert)	d = 1206 mm
Width of pit	w = 2500 mm
Length of pit	l = 20000 mm
Percentage free volume	V_{free} = 95 %
Soil infiltration rate	f = 8.90¼10^{-6} m/s
Wetted area of pit 50% full	a_{s50} = l ¼d + w ¼d = 27127549 mm^2

Table equations

Inflow (cl.3.3.1)	I = M100 ¼A
Outflow (cl.3.3.2)	O = a_{s50} ¼f ¼D
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	0.36;	9.3;	1.89;	17.6;	9.68;	0.07;	9.61
10	0.51;	13.2;	1.96;	25.8;	14.25;	0.14;	14.10
15	0.62;	16.0;	2.00;	32.0;	17.67;	0.22;	17.45
30	0.79;	20.5;	2.03;	41.5;	22.88;	0.43;	22.44
60	1.00;	26.0;	2.00;	52.1;	28.71;	0.87;	27.84
120	1.22;	31.8;	1.96;	62.2;	34.30;	1.74;	32.56
240	1.50;	38.9;	1.90;	73.9;	40.75;	3.48;	37.27
360	1.69;	43.9;	1.86;	81.7;	45.04;	5.22;	39.82
600	1.95;	50.6;	1.81;	91.4;	50.41;	8.69;	41.71
1440	2.48;	64.5;	1.71;	110.4;	60.86;	20.86;	40.00

Required storage volume S_{req} = 41.71 m^3

Soakaway storage volume S_{act} = l ¼d ¼w ¼V_{free} = 57.27 m^3

PASS - Soakaway storage volume

Time for emptying soakaway to half volume t_{s50} = S_{req} ¼0.5 / (a_{s50} ¼f) = 23hr 59min 40s

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