



**HOLDGATE
CONSULTING**

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Project New Tesco Store, Oldham Road				Job no. 25-277	
Calcs for Site Soakaway Design				Start page no./Revision 2	
Calcs by NM	Calcs date 11/06/2025	Checked by	Checked date	Approved by	Approved date

SOAKAWAY DESIGN

In accordance with BRE Digest 365 - Soakaway design

Tedds calculation version 2.0.05

Design rainfall intensity

Location of catchment area Manchester
Impermeable area drained to the system $A = 568.0 \text{ m}^2$
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 $M5_{60\text{min}} = 19.0 \text{ mm}$
Increase of rainfall intensity due to global warming $p_{\text{climate}} = 30 \%$

Soakaway / infiltration trench details

Soakaway type Rectangular
Minimum depth of pit (below incoming invert) $d = 1181 \text{ mm}$
Width of pit $w = 5000 \text{ mm}$
Length of pit $l = 10500 \text{ mm}$
Percentage free volume $V_{\text{free}} = 95 \%$
Soil infiltration rate $f = 10.0 \times 10^{-6} \text{ m/s}$
Wetted area of pit 50% full $a_{s50} = l \times d + w \times d = 18310185 \text{ mm}^2$

Table equations

Inflow (cl.3.3.1) $I = M30 \times A$
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	30 year rainfall, M30 (mm)	Inflow (m ³)	Outflow (m ³)	Storage required (m ³)
5	0.36;	8.9;	1.48;	13.1;	7.45;	0.05;	7.40
10	0.51;	12.6;	1.51;	19.0;	10.80;	0.11;	10.69
15	0.62;	15.3;	1.53;	23.4;	13.29;	0.16;	13.12
30	0.79;	19.5;	1.54;	30.1;	17.09;	0.33;	16.76
60	1.00;	24.7;	1.53;	37.9;	21.52;	0.66;	20.86
120	1.22;	30.1;	1.51;	45.6;	25.89;	1.32;	24.57
240	1.48;	36.6;	1.48;	54.2;	30.79;	2.64;	28.15
360	1.67;	41.2;	1.46;	60.3;	34.23;	3.96;	30.27
600	1.90;	46.9;	1.43;	67.3;	38.23;	6.59;	31.64
1440	2.42;	59.8;	1.39;	83.1;	47.19;	15.82;	31.37

Required storage volume $S_{\text{req}} = 31.64 \text{ m}^3$

Soakaway storage volume $S_{\text{act}} = l \times d \times w \times V_{\text{free}} = 58.92 \text{ m}^3$

PASS - Soakaway storage volume

Time for emptying soakaway to half volume $t_{s50} = S_{\text{req}} \times 0.5 / (a_{s50} \times f) = 24 \text{ hr}$

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