	Project	Sale, Manchester			Job no.	1/21541
Clancy Consulting Ltd 19 Upper King Street, Norwich, NR3 1RB.	Calcs for				Start page no./Revision 1	
	Calcs by CN	Calcs date 27/01/2023	Checked by	Checked date	Approved by	Approved date

PLANE INFILTRATION SYSTEM DESIGN

In accordance with CIRIA C753 SUDS

Tedds calculation version 2.0.04

Design rainfall intensity

Location of catchment area	Manchester	
Impermeable area drained to the system	$A = 533.0 \text{ m}^2$	
Return period	Period = 100 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_60min = 18.0 mm	
Increase of rainfall intensity due to global warming	$p_{climate} = 45$ %	

Infiltration blanket details

Base area of blanket	$A_b = 533.0 \text{ m}^2$
Porosity	n = 0.3
Drainage ratio	$R = A / A_b = 1.0$
Soil infiltration rate	$f = 3.99 \times 10^{-6}$ m/s

Table equations

Rainfall intensity	$i = M100 / D$
Minimum depth required (Eq. 25.1)	$H = D / n \times (R \times i - f)$

Duration, D (min)	Growth factor Z1	M5 rainfalls (mm)	Growth factor Z2	100 year rainfall, M100 (mm)	Intensity, i (mm/hr)	Depth (mm)
5	0.36;	9.4;	1.90;	17.8;	213.72;	55;
10	0.51;	13.3;	1.96;	26.1;	156.78;	79;
15	0.62;	16.2;	2.00;	32.4;	129.42;	96;
30	0.79;	20.6;	2.03;	41.8;	83.61;	115;
60	1.00;	26.1;	2.00;	52.2;	52.23;	126;
120	1.22;	31.8;	1.96;	62.3;	31.13;	112;
240	1.48;	38.6;	1.90;	73.4;	18.36;	53;
360	1.67;	43.6;	1.86;	81.1;	13.52;	0;
600	1.90;	49.6;	1.81;	89.9;	8.99;	0;
1440	2.42;	63.2;	1.72;	108.7;	4.53;	0;

Min depth of blanket req'd	$H_{max} = 126$ mm
Time to empty blanket to half volume - Eq.25.6(1)	$t_{s50} = n \times H_{max} / (2 \times f)$ = 1hr 18min 57s

PASS - Infiltration system discharge time less than or equal to 24 hours