
MP8344

Anchor Farm, Silkstone

MP Consulting Engineers Ltd

Date	Rev	Description
July '25	0	Initial issue



UNIT 4a, MERCURY COURT
MANSE LANE, KNARESBOROUGH
HG5 8LF

Project				Job Ref.	
Anchor Farm, Silkstone				MP8344	
Section				Sheet no./rev.	
Structural Calculations				2	
Calc. by	Date	Chk'd by	Date	App'd by	Date
SP	01/08/2025	SP	31/07/2025		

Contents

Technical description.....	3
Project brief	3
Soakaway design (BRE digest 365/SUDS)	3
Soakaway design.....	3



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Project Anchor Farm, Silkstone				Job Ref. MP8344	
Section Structural Calculations				Sheet no./rev. 3	
Calc. by SP	Date 01/08/2025	Chk'd by SP	Date 31/07/2025	App'd by	Date

Technical description

Project brief

Soakaway design for proposed barn conversion.

Interim findings confirm an Infiltration rate of 22.0×10^{-6} m/s

No watercourse within the site boundary or within suitable distance.

No public surface or combined drainage to connect to.

Existing building informally soaks away into the ground, exact details for system unavailable but not likely to be able to be reused.

Soakaway design

Drained area or building roof = 255m²

Infiltration rate calculated from on site soakaway testing carried out in accordance with BRE Digest 365,

SOAKAWAY DESIGN (BRE DIGEST 365/SUDS)

SOAKAWAY DESIGN

In accordance with BRE Digest 365 - Soakaway design

Tedds calculation version 2.0.06

Design rainfall intensity

Location of catchment area	Sheffield
Impermeable area drained to the system	A = 255.0 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_60min = 19.0 mm
Increase of rainfall intensity due to global warming	p _{climate} = 0 %

Soakaway / infiltration trench details

Soakaway type	Rectangular
Minimum depth of pit (below incoming invert)	d = 485 mm
Width of pit	w = 3000 mm
Length of pit	l = 7000 mm
Percentage free volume	V _{free} = 97 %
Soil infiltration rate	f = 22.0×10^{-6} m/s
Wetted area of pit 50% full	a _{s50} = l × d + w × d = 4848055 mm ²

Table equations

Inflow (cl.3.3.1)	I = M30 × A
Outflow (cl.3.3.2)	O = a _{s50} × f × 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	6.8	1.45	9.9	2.53	0.03	2.50



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Section Structural Calculations				Sheet no./rev. 4	
Calc. by SP	Date 01/08/2025	Chk'd by SP	Date 31/07/2025	App'd by	Date

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)
10	0.51	9.7	1.49	14.4	3.67	0.06	3.61
15	0.62	11.8	1.50	17.7	4.52	0.10	4.42
30	0.79	15.0	1.53	22.9	5.84	0.19	5.65
60	1.00	19.0	1.54	29.3	7.46	0.38	7.08
120	1.22	23.2	1.54	35.6	9.08	0.77	8.32
240	1.48	28.1	1.52	42.8	10.91	1.54	9.37
360	1.67	31.7	1.51	47.8	12.18	2.30	9.88
600	1.90	36.1	1.48	53.6	13.67	3.84	9.83
1440	2.42	46.0	1.44	66.2	16.87	9.22	7.65

Required storage volume

$$S_{req} = 9.88 \text{ m}^3$$

Soakaway storage volume

$$S_{act} = l \times d \times w \times V_{free} = 9.88 \text{ m}^3$$

PASS - Soakaway storage volume

Time for emptying soakaway to half volume

$$t_{s50} = S_{req} \times 0.5 / (a_{s50} \times f) = 12\text{hr } 51\text{min } 57\text{s}$$

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

PROPOSED PIT SIZE OF 3M X 7M X 0.5M DEEP ACCEPTABLE

REFER TO DRAWING REF MP8344 S100 FOR TYPICAL INSTALLATION DETAILS