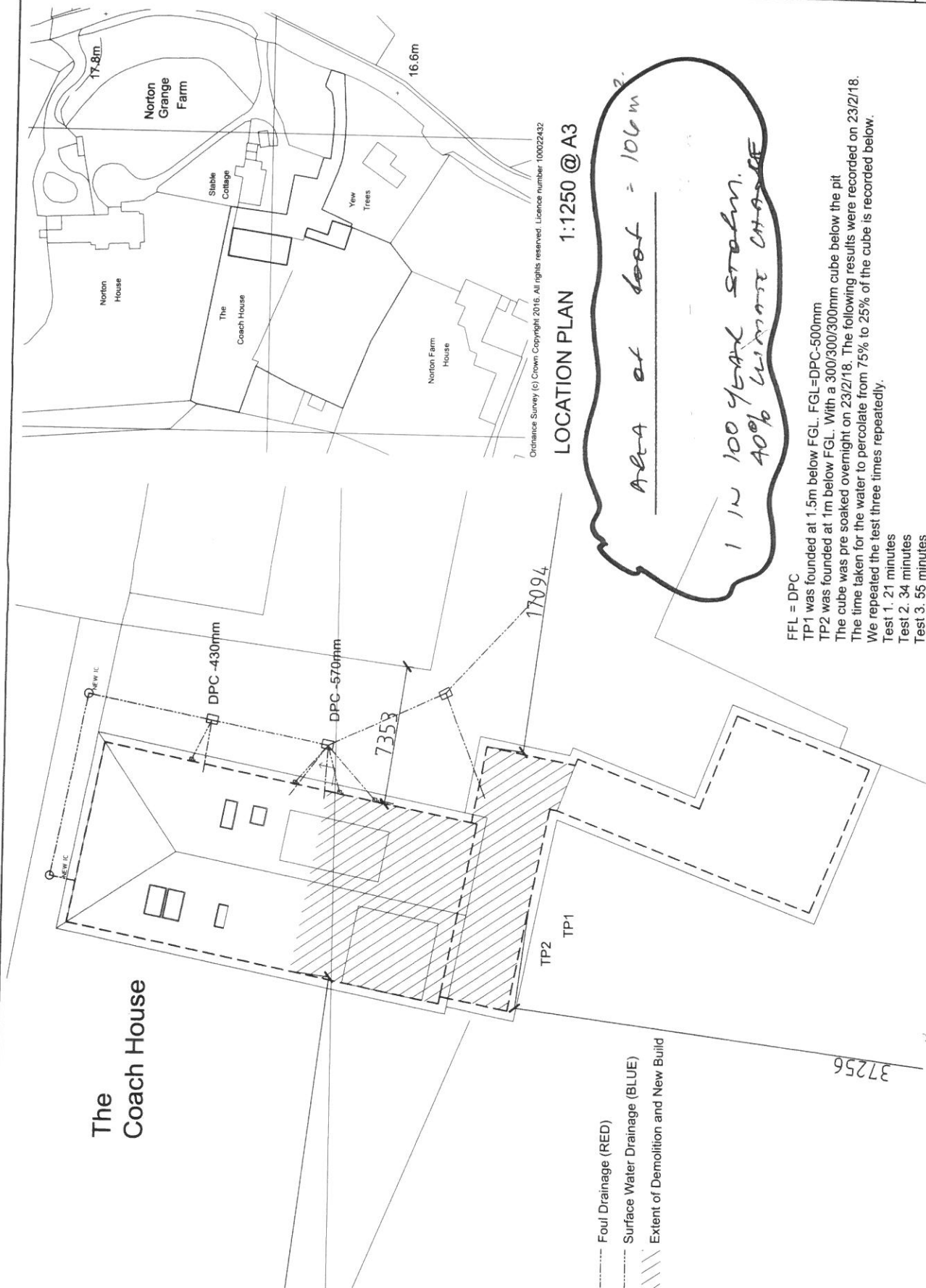




© Jarchitectures, all rights reserved.
Use figured dimensions only.
All dimensions are to be checked on site before
any work is carried out. Please contact the
Architect immediately regarding any
discrepancies discovered on site.

	Rev.	Notes	Date
			
JB ARCHITECTURE The Bricks Manor Farm Barns Chichester, West Sussex, PO20 7PL T: 01243 783342 E: admin@jbarch.co.uk W: www.jbarch.co.uk			
Project The Coach House Norton Lane PO20 3NH			
Drawing Site and Location Plans			
Drawn By IC		Scale 1:1250, 1:200	
Title 18. 09.17		Revision	
Drawing No.			

FFL = DPC
TP1 was founded at 1.5m below FGL FGL=DPC-500mm
TP2 was founded at 1m below FGL. With a 300/300/300mm cube below the pit
The cube was pre soaked overnight on 23/2/18. The following results were recorded on 23/2/18.
The time taken for the water to percolate from 75% to 25% of the cube is recorded below.
We repeated the test three times repeatedly.
Test 1. 21 minutes
Test 2. 34 minutes
Test 3. 55 minutes

SITE PLAN 1:200 @ A3

provide
3.0m x 3.5m x 0.8m bath below inlet
over ADVANCE soaking tank for the
thickener mill tank from construction.

 Tekla Tedds Hamill Davies Limited Ivydale Lower Chase Road Swanmore, Southampton SO32 2PB	Project				Job no.	
	The Coach House, Norton				17/3021	
	Calcs for				Start page no./Revision	
	Soakaway				1	
	Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date
	B.H.	19/04/2018				

SOAKAWAY DESIGN

In accordance with BRE Digest 365 - Soakaway design

Tedds calculation version 2.0.02

Design rainfall intensity

Location of catchment area	Other
Impermeable area drained to the system	A = 106.0 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 = 19.0 mm
Increase of rainfall intensity due to global warming	p _{climate} = 40 %

Soakaway / infiltration trench details

Soakaway type	Rectangular ✓
Minimum depth of pit (below incoming invert)	d = 730 mm ✓
Width of pit	w = 3500 mm ✓
Length of pit	l = 3000 mm ✓
Percentage free volume	V _{free} = 95 %

Soil infiltration rate (BRE digest 365)

Length of trial pit	l _{trial} = 300 mm
Width of trial pit	b _{trial} = 300 mm
Depth of trial pit (below invert)	d _{trial} = 300 mm
Free volume (if fill used)	V _{trial} = 100 %
75% depth of pit	d ₇₅ = (d _{trial} × 0.75) = 225.00 mm
50% depth of pit	d ₅₀ = (d _{trial} × 0.50) = 150.00 mm
25% depth of pit	d ₂₅ = (d _{trial} × 0.25) = 75.00 mm
Test 1 - time to fall from 75% depth to 25% depth	T1 = 21 min
Test 2 - time to fall from 75% depth to 25% depth	T2 = 34 min
Test 3 - time to fall from 75% depth to 25% depth	T3 = 55 min
Longest time to fall from 75% depth to 25% depth	t _g = max(T1, T2, T3) = 55 min
Storage volume from 75% to 25% depth	V _{p75_25} = (l _{trial} × b _{trial} × (d ₇₅ - d ₂₅)) × V _{trial} = 0.01 m ³
Internal surface area to 50% depth	a _{p50} = ((l _{trial} × b _{trial}) + (l _{trial} + b _{trial}) × 2 × d ₅₀) = 0.27 m ²
Surface area of soakaway to 50% storage depth	A _{s50} = 2 × (l _{trial} + b _{trial}) × d _{trial} / 2 = 0.180 m ²
Soil infiltration rate	f = V _{p75_25} / (a _{p50} × t _g) = 15.2 × 10 ⁻⁶ m/s
Wetted area of pit 50% full	a _{s50} = l × d + w × d = 4744206 mm ²

Table equations

Inflow	I = M100 × A
Outflow	O = a _{s50} × f × D
Storage	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	9.5	1.90	18.0	1.91	0.02	1.89
10	0.51	13.5	1.97	26.5	2.81	0.04	2.76
15	0.62	16.4	2.00	32.8	3.48	0.06	3.41

 Tekla Tedds Hamill Davies Limited Ivydale Lower Chase Road Swanmore, Southampton SO32 2PB	Project				Job no.	
	The Coach House, Norton				17/3021	
	Calcs for				Start page no./Revision	
Soakaway				2		
Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date	
B.H.	19/04/2018					

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)
30	0.79	20.9	2.03	42.4	4.49	0.13	4.37
60	1.00	26.6	2.00	53.1	5.63	0.26	5.37
120	1.22	32.5	1.95	63.4	6.73	0.52	6.21
240	1.50	39.8	1.89	75.3	7.98	1.04	6.95
360	1.69	45.0	1.85	83.2	8.82	1.55	7.26
600	1.95	51.8	1.80	93.1	9.87	2.59	7.28
1440	2.48	66.0	1.70	112.2	11.90	6.21	5.69

Required storage volume

$$S_{\text{req}} = 7.28 \text{ m}^3$$

Soakaway storage volume

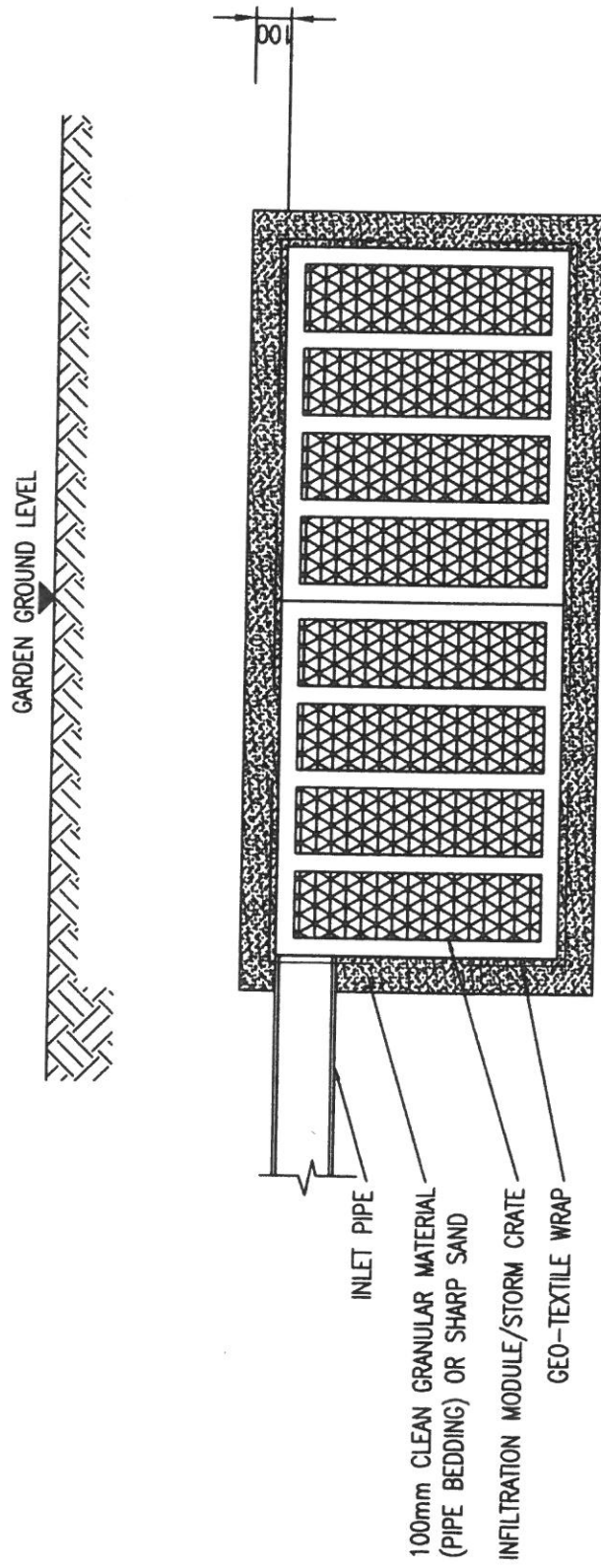
$$S_{\text{act}} = l \times d \times w \times V_{\text{free}} = 7.28 \text{ m}^3$$

PASS - Soakaway storage volume

Time for emptying soakaway to half volume

$$t_{s50} = S_{\text{req}} \times 0.5 / (a_{s50} \times f) = 14\text{hr } 3\text{min } 59\text{s}$$

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



GARDEN SOAKAWAY DETAIL