

Title of scheme: NEW DWELLING ADJACENT HUNTS COTTAGE, GREAT ROURNANT

INTRODUCTION

THE FOLLOWING CALCULATION ARE FOR DESIGN OF A SOAKAWAY TO DRAIN THE SURFACE WATER FROM THE ROOF OF A SMALL SINGLE-STORY DWELLING. EXTERNAL HANDINGS ARE TO BE PRESENT.

THE BRITISH GEOLOGICAL SURVEY MAP INDICATES LIKELY PRESENCE OF CHIPPING NORTON LIMESTONE (WITH NO SURFICIAL DEPOSITS). TRIAL PITS ON SITE CONFIRM THE PRESENCE OF HEAVILY FRACTURED LIMESTONE AT A DEPTH OF 200mm. (BGS MAP & TRIAL PIT PHOTO IN APPENDIX/NOE-NO WARE STRIKE

PERMEABILITY TESTING WAS CARRIED OUT IN ACCORDANCE WITH BRE 365. TEST RESULTS ARE IN APPENDIX

SOAKAWAY SIZE IS TO BE CALCULATED IN ACCORDANCE WITH BRE 365.

DESIGN IS TO BE BASED ON (IN 100 YEAR STORM) WITH AN ALLOWANCE OF 40% FOR CLIMATE CHANGE.

IMPERMEABLE AREA IS 62m²

SOAKAWAY DESIGN

DESIGN WILL UTILISE TEDDS BY TEKLA

PERMEABILITY IS BASED ON TEST DATA ATTACHED.

TIME TO FALL 75-25% :

TEST 1 - 30min

TEST 2 - 30.5min

TEST 3 - 31.5min

PERMEABILITY RATE
72.6 x 10⁻⁶ m/s
IS ACCEPTABLE (GOOD)

CALCULATION BASED ON 1500 WIDE X 800 DEEP SOAKAWAY PIT

REQD LENGTH (CALCULATED) = 2.323m

USE 2.5m LONG PIT

TIME TO EMPTY TO 50% = 1hr 39m 30sec OK

Project New dwelling Adjacent to Hunts Cottage, Great Rollright		Job no. 23-077	
Calcs for Soakaway Design		Start page no./Revision 3	
Calcs by MW	Calcs date March 24		

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	0.81;	22.7;	2.02;	45.8;	2.84;	0.40;	2.44
60	1.00;	28.0;	1.99;	55.6;	3.45;	0.80;	2.65
120	1.20;	33.6;	1.94;	65.2;	4.04;	1.60;	2.45
240	1.42;	39.8;	1.89;	75.2;	4.66;	3.20;	1.47
360	1.57;	44.0;	1.86;	81.7;	5.06;	4.79;	0.27
600	1.74;	48.7;	1.82;	88.7;	5.50;	7.99;	0.00
1440	2.16;	60.5;	1.74;	105.2;	6.52;	19.18;	0.00

Required storage volume $S_{req} = 2.65 \text{ m}^3$

Soakaway storage volume $S_{act} = l \times d \times w \times V_{free} = 2.65 \text{ m}^3$

PASS - Soakaway storage volume

Time for emptying soakaway to half volume $t_{s50} = S_{req} \times 0.5 / (a_{s50} \times f) = 1\text{hr } 39\text{min } 30\text{s}$

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

WELLAN

New Dwelling Adjacent Hunts Cottage Great Rollright

Annex A

BGS Map Extract

Trial Pit Photo

WELLAN



Trial Pit Showing Fractured Limestone.

Note - no water strike despite extended rainfall prior to test.

WELLAN

New Dwelling Adjacent Hunts Cottage Great Rollright

Annex B

Permeability Test Results

Soakaway Test Pit Record

(BRE Digest 365)

Trial Pit No.

1

TEST

Site:

NEW DWELLING FOOTPATH
HUNTS COTTAGE, GREAT PELHAM

Date

14.03.24

Trial Pit Size (Length x width x depth) - metres

3.2m x 0.6m x 1.6m.

Time from commencement (mins)	Depth from ground level (mm)
0	1000
6	1100
13	1200
21	1300
32	1400
47	1500
62	1600

1150 (25%) TIME 9.5 mins

1450 (75%) TIME 39.5 mins

75% → 25% = 30 mins

Soakaway Test Pit Record

(BRE Digest 365)

Trial Pit No.

1

TEST
2

Site:

NEW DWELING ADJACENT
HUNTS COTTAGE, GT ROLLING

Date

14-03-24

Trial Pit Size (Length x width x depth) - metres

3.2 x 0.6 x 1.6 m

Time from commencement (mins)		Depth from ground level (mm)
0		1000
6		1100
14		1200
22		1300
33		1400
48		1500
63		1600

25% (1150) 10 mins

75% (1450) 40.5 mins

75% → 25% = 30.5 mins.

Soakaway Test Pit Record

(BRE Digest 365)

Trial Pit No.

1

TEST
3

Site:

NEW DWELLING ADJACENT
HUNTS COTTAGE, GT RELLINGHAM

Date

14.03.24

Trial Pit Size (Length x width x depth) - metres

3.2 x 0.6 x 1.6m

Time from commencement (mins)		Depth from ground level (mm)
0		1000
7		1100
15		1200
28		1300
35		1400
50		1500
66		1600

25% (1150) 11 mins.

75% (1450) 42.5 mins

75% → 25% = 31.5 mins