

Surface Water Drainage – Bonny Barn, Waddington

Surface water drainage will be by means of infiltration to ground. Infiltration tests have been carried out to determine the suitability of ground for the proposed system in line with BRE 365 guidance.

The Infiltration rate is calculated from the test results as 0.056 m/h

A site plan showing the location of the test pits and the proposed site of the soakaway crates is shown below.

A Rainbox geocellular attenuation crate is the chosen system. (See attached)

The size of the soakaway has been determined to ensure the tank will provide sufficient capacity for 100 year return period with a 45 year climate change factor.

Details of the infiltration results and calculations for sizing the soakaway accounting for climate change are shown below. A maintenance plan and statement is provided.

The crates will be installed in line with the manufacturers technical guidance.

Infiltration Tests

17th January 2024

Conditions – Dry

Soil – Sandy/stoney/clay loam

Test Hole Dimensions

Length 1.5m

Width 0.6m

Depth 1.2m

Test Hole 1 Time from 75cm to 25cm

1 78 min

2 91 min

Test Hole 2 Time from 75cm to 25cm

1 86 min

2 103 min

Project	Bonny Barn
Date	16/02/2024
Site Address	Bonny Barn, Waddington, Clitheroe, BB7 3HU

Catchment details				
Buildings	1x	334	m^2	x 100%
	0x	-	m^2	-
	Total	334	m^2	x 100%
Dense Surfacing	1x	100	m^2	x 100%
Effective Area	434		m^2	

Storage Details (Assumed)		
Tank Size (m)	14 x 1.7 x 2 @95%	
Outflow Details		
Infiltration Rate	0.056	m/hr
Attenuation Control	-	N/A

Rainfall Details - FSR Method		
Return Period	100	Years
Climate Change Factor	45	%
r Value	0.24	
M5-60	20	mm

Results		
Outcome	Pass	
Critical Storm Duration	10	hours
Hmax	1.93	m
Required Volume	43.6	m^3
Time to half empty	7.6	hours

Duration (min)	Intensity (mm)	Required Storage (m^3)
30	29.3	18.5
60	40.0	24.7
120	52.8	31.4
240	68.1	37.8
360	78.8	41.2
600	93.6	43.6
1440	128.0	40.8

Note

A 'worst case scenario' approach has been applied throughout calculations to ensure the effectiveness of the soakaway

SuDS Maintenance

The actual maintenance regime, plans, and method statements will be the responsibility of the Management Company of the development. Included within this section is guidance on how the maintenance should be carried out, along with an example Method Statement.

Maintenance Plan

- Regular inspection and cleaning of catchment gutters reduces the likelihood of contamination typically every 3 to 6 months.
- Regular jet-washing of permeable block paving can be used to keep joints and voids clear, this should be carried out every 6 months.
- The catch pit chamber/leaf catcher and flow control chamber should be emptied every 3 months, and after every large storm event to ensure that there are no blockages.
- The inlets and outlets to the rainwater harvesting tanks should be checked every 3 months, and after every large storm event to ensure that there are no blockages

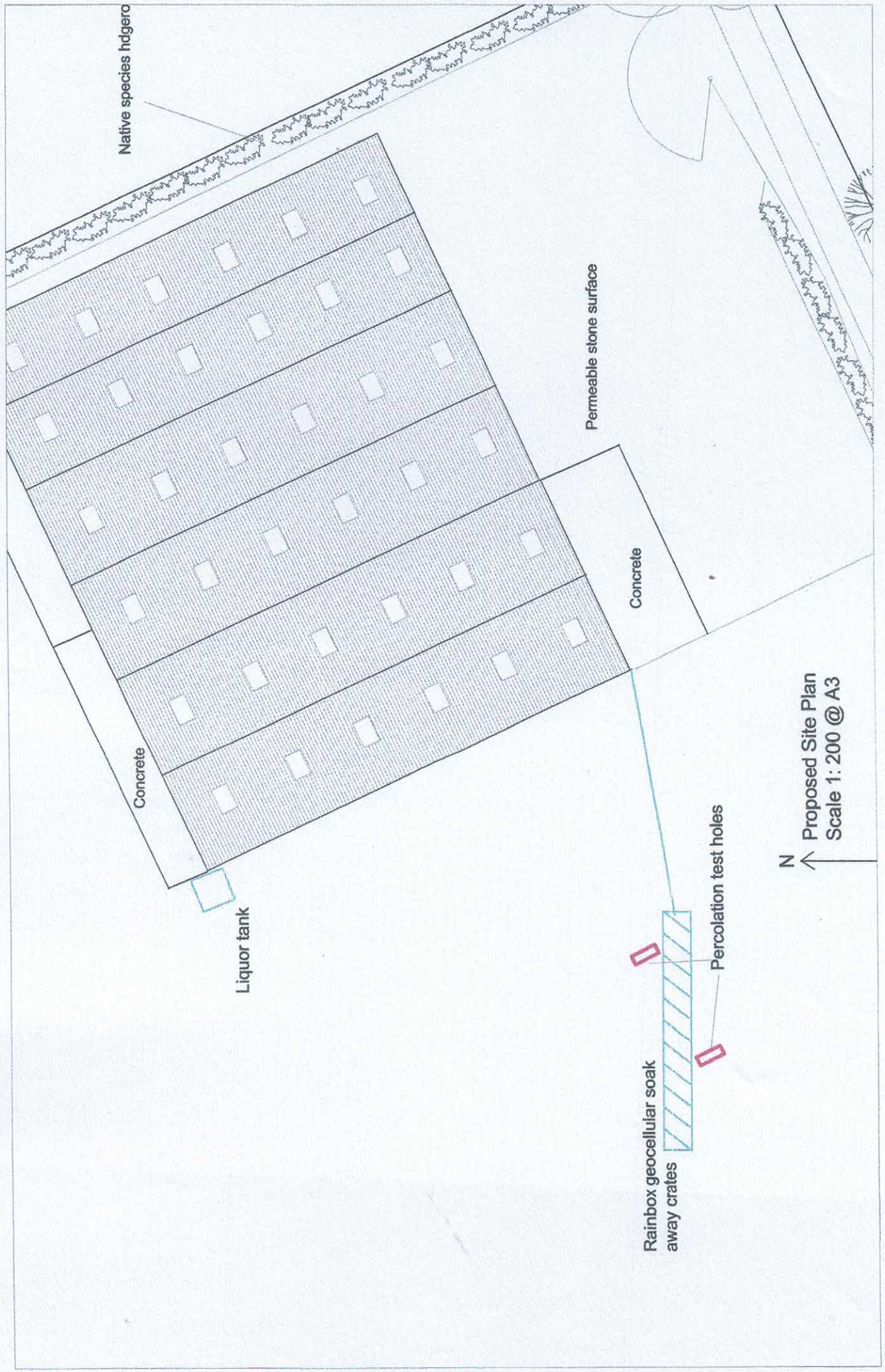
Method Statement

Below is a typical method statement, and something similar should be adopted by the Management Company.

- All operatives must wear suitable PPE including high visibility clothing
- Traffic management to be installed in accordance with the Safety at Street Works and Road Works Code of Practice
- Using hand tools only, remove any debris from gully gratings and/or drainage channels
- Use hand tools to reform channel if necessary to facilitate flow of surface water
- Remove traffic management

Additional notes

- Do not attempt to lift any ironwork
- Do not attempt to use any mechanical equipment on this drainage maintenance activity



Percolation Test

Site: Waddington - Benny Bar

Date: 17th January

Conditions: Sunny (following snow)

Test Pit: 1

Length: 1500mm

Width: 600mm

Depth: 1200mm (Water to 1000mm)

Test No	Time @ 750mm	Time @ 250mm	Mins
1	12.05	13.23	78
2	14.03	15.34	91
3			

Notes:

Percolation Test

Site: Waddington - Bury Res

Date 17th Jan

Conditions Strong (following rain)

Test Pit 2

Length 1500mm

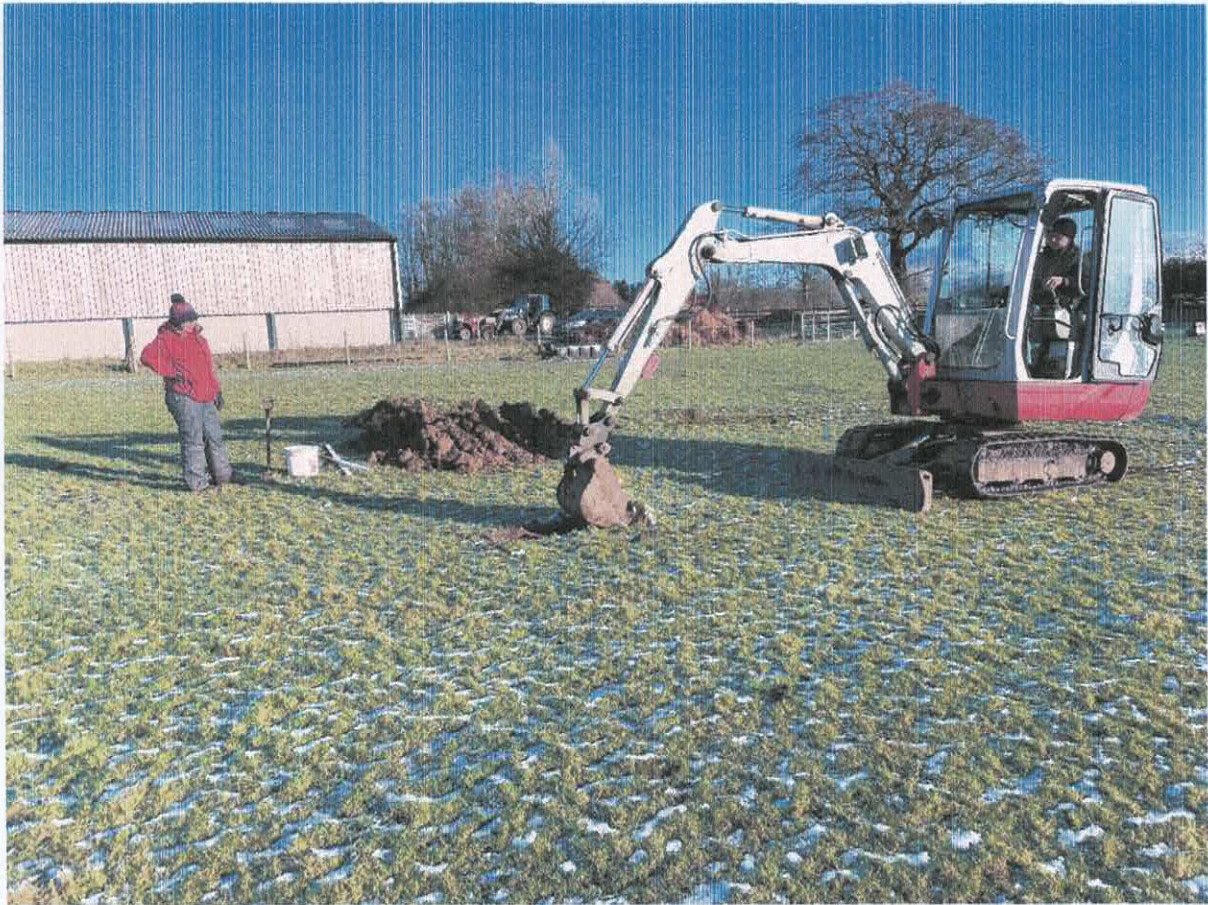
Width 600mm

Depth 1200mm (fill to 1000mm)

Test No	Time @ 750mm	Time @ 250mm	Mins
1	12.20	13.46	86
2	14.35	16.18	103
3			

Notes:

Images & infiltration methodology





Trench 150cm long x 120cm deep x 60cm wide



Fill to 100cm



Start timing @ 75cm



Finish timing @ 25cm



Drain complete and repeat

