Bridge End Farm

Woodhouse Lane
Slaidburn
Clitheroe
Ribble Valley
BB7 3AH

Planning Application No: 3/2024/0588

Grid Ref: 370396 453663

Proposal: Approval of details reserved by condition 5 (surface water drainage) of planning permission 3/2023/0644.

Location: Bridge End Farm Wood House Lane Slaidburn BB7 3AH

PROPOSED ERECTION OF AN AGRICULTURAL BUILDING

SURFACE WATER DRAINAGE STRATEGY

The detailed surface water sustainable drainage strategy shall be based upon the sustainable drainage and principles and requirements set out in the National Planning Policy Framework, Planning Practice Guidance and Defra Technical Standards for Sustainable Drainage Systems…

Bridge End is an outlying farm located about 1.5km North-West of Slaidburn and standing on the East side of Lanshaw Brook.

The proposal is for the erection of a new small agricultural building on a greenfield site in the corner of a field c.135m East of Bridge End Farmhouse. There has been no previous development in respect of 'drainage' for the site in question.

The agricultural building will be accessed by a hardcore track extending from the farm entrance off Wood House Lane and then running East past the Bridge End Farmhouse.

HIERARCHY OF DRAINAGE

The National Planning Practice Guidance sets out The Hierarchy of Drainage to promote the use of Sustainable Drainage Systems, by aligning modern drainage systems with natural water processes. The aim of Hierarchy of Drainage is to drain surface water run-off as sustainable, as reasonably practicable.

As stated in the National Planning Practice Guidance, the aim should be to discharge surface water run-off as high up the drainage hierarchy, as reasonably practicable:

1. into the ground (infiltration);
2. to a surface water body;
3. to a surface water sewer, highway drain, or another drainage system;
4. to a combined sewer.

As the proposed building is set in a greenfield location a minimum of 125m away from Lanshaw Brook to the West of the building, and in light of distance from the Brook and the preferred hierarchy above, the chosen method of surface water drainage for the new building is ground infiltration (soakaway) as preferred option No1 above.

In order to show that the ground infiltration method is a suitable choice for surface water drainage from the building, and pursuant with BRE Digest 365 Soakaway and Percolation test guidance… infiltration tests have been carried out to show that ground conditions are suitable for percolation.

Test results as follows: -

Cont…

PERCOLATION TEST (BRE Digest 365)

A percolation test is suitable for small scale developments and is performed in an excavated trial pit.

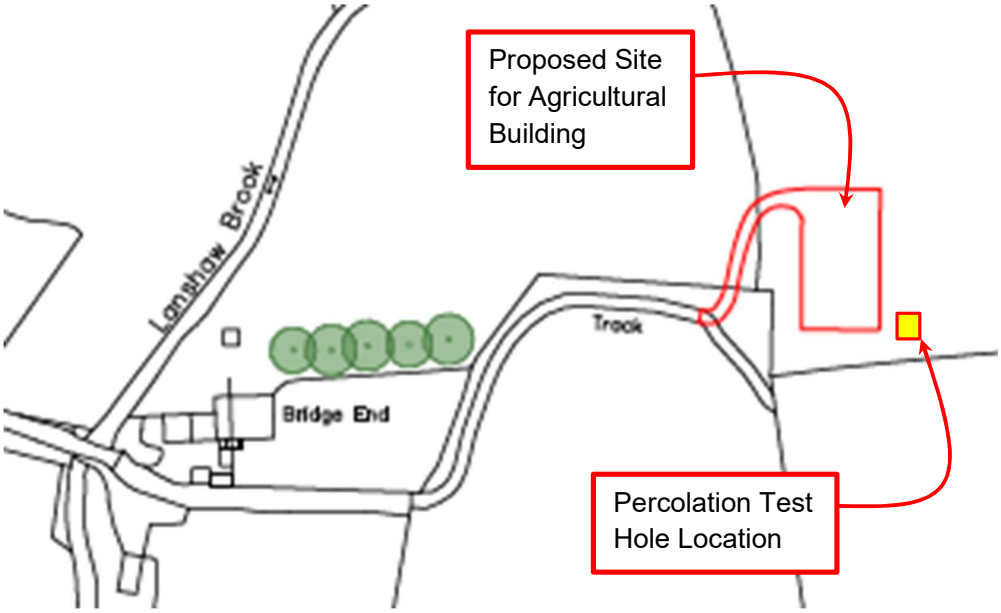
A percolation test (or "perc test") determines the rate of water absorption into the ground. The procedure measures how long it takes a measured amount of water to drain away from a saturated hole dug into the ground; the result determines the suitability (and permeability) of the soil, and ensures that the ground has sufficient drainage capacity to handle the amount of water that will come from the proposed building.

METHOD: -

Step 1: Dig the hole

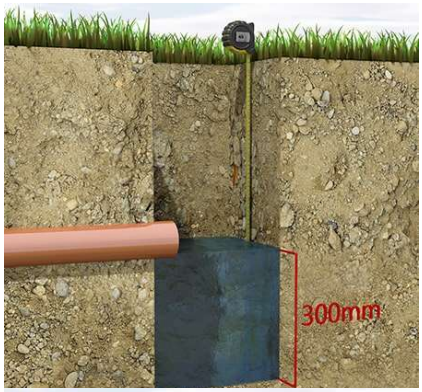
Mark out a test hole that is 300mm x 300mm wide and at least 300mm deep **below the proposed invert level of the outlet pipe**.

The test hole must be below the invert level. (see photos of the test hole and it's location below)



Cont…

The test hole was excavated c. 2m x 2m down to a depth equivalent to the proposed invert level of the surface water outfall/discharge pipe. Thereafter a test hole 300mm x 300mm x 300mm deep was hand dug in the centre of the initial excavation.

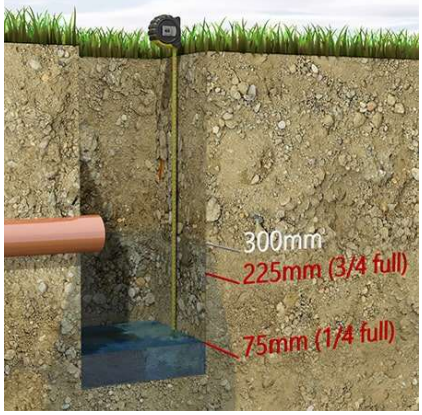


Step 2: Saturate the soil

The 300 x 300 x 300 test hole was then cleared of any loose debris and the hole was filled to the brim with water (i.e. 300mm deep). The water was then allowed to seep away overnight.

Step 3: Determine the percolation rate

The following day the test hole was refilled to the brim with water (i.e. 300mm deep), and we then observed how quickly the water seeped away.



When the water level dropped to 225mm (¾ full) — we started timing how long it took for the water level to reach 75mm (¼ full). This gave us the time it took the water level to drop 150mm.

In order to calculate the percolation rate we followed the guidance, as below…

- Divide the number of seconds by 150 to determine the average time it takes the water level to drop 1mm — this is called the Vp number.

Results: -

- Time taken to drop from 225mm to 75mm – 2hr 43mins (163 minutes) = 9,780 seconds
- Therefore 9780 seconds divided by 150mm = 65.2
- So, the **VP number for the test hole was 65.2**

DRAINAGE DESIGN

The results of the percolation test were provided to Dunster Consulting Ltd of Harrogate in order to design a suitable drainage strategy for the surface water drainage from the new agricultural building.

Given the results of the percolation test above Dunster Consulting designed a 'Perforated Concrete Ring with Infilled Square Trench Soakaway', and provided an alternative option of constructing a 'Geo-cellular below ground crates wrapped in a geotextile filter membrane'.

Our preferred method of soakaway was to adopt the 'Perforated Concrete Ring with Infilled Square Trench Soakaway'

Details of the design, including proposed maintenance methods are shown on the Drainage Strategy Drg. Ref: 24-999.A1.001 appended to this report.

Appendices

- Appendix No1 Dunster Consulting Ltd - Drainage Strategy Drg. Ref: 24-999.A1.001 Rev -