

***AGRICULTURAL LAND CLASSIFICATION***

**Sintra Property Developments Limited**

*Bowlacre Farm*



Our Ref: SES/SPD/BF/#1

Date: 19<sup>th</sup> August 2020

**Client:**

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SK9 7RT

**AGRICULTURAL LAND CLASSIFICATION**

*Bowlacre Farm*

A report prepared on behalf of **Soil Environment Services** by:

[REDACTED]

*This report has been prepared by Soil Environment Services with all reasonable skill, care and diligence, within the terms of The Contract with The Client. The report is the property of The Client who can assign this report to any third party who will then be afforded the same assurances as detailed within the terms of the original Contract with The Client.*

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**DRAWING 1**            **ALC Grade and survey points**

**APPENDIX A**            **Survey profile data sheet**

**STATEMENT OF COMPETENCE**

**GENERAL INFORMATION SOURCES**

## 1. INTRODUCTION

An Agricultural Land Classification (ALC) has been carried out on ~ 14 ha of land at Bowlacre Farm (Drawing 1). The site is centred on Grid Ref. 394902,392843.

The survey was conducted on the 10<sup>th</sup> August 2020 and classifies the land into one or more of the above grades.

### 1.1 Methodology

Agricultural land is classified into the following grades according to the 1988 guidelines<sup>1</sup>.

| Grade | Description  |
|-------|--|
| 1     | <b>Excellent quality agricultural land</b> with no or very minor limitations to agricultural use.  |
| 2     | <b>Very good quality agricultural land</b> with minor limitations which affect crop yield, cultivation or harvesting.  |
| 3a    | <b>Good quality agricultural land</b> capable of producing moderate to high yields of a narrow range of arable crops or moderate yields of a wider range of crops.<br><b>Moderate quality agricultural land</b> capable of producing moderate yields of a narrow range of crops or lower yields of a wider range of crops. |
| 3b    |  |
| 4     | <b>Poor quality agricultural land</b> with severe limitations which significantly restrict the range of crops and/or level of yields.  |
| 5     | <b>Very poor quality agricultural land</b> with very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.  |

The classification includes an initial desktop investigation to examine previously mapped soil types and to note the drift and solid geology followed by the field survey consisting of auger borings at one every 100 m in general and a pit excavated in each of the main soil types to confirm the structures and stone content if needed. Laboratory analysis of soil textures is undertaken if needed in order to confirm textures such the *heavy/medium* clay and *medium/fine* sand categories or stone content. All site survey profile data is listed in Appendix A.

All of the potential limitations are assessed and then the most limiting factor dictating the ALC grade was determined for this site and is detailed in Table 2.

## 1.2 Previous ALC gradings

Grading on the MAFF (1983) 1: 250 000 map indicated the site was mapped as ALC Grade 3 across the west and Grade 4 in the east. No previous detailed surveys have been undertaken for the site.

## 2. CLIMATIC LIMITATIONS

### 2.1 Overall climate

The climatological data for the entire site centre is detailed in Table 1.

| <b>Factor</b>             | <b>Units</b>     | <b>Value</b> |
|---------------------------|------------------|--------------|
| Altitude AOD              | m                | 150          |
| Accumulated temperature   | day°C (Jan-June) | 1258.2       |
| Average Annual Rainfall   | mm               | 946.6        |
| Field Capacity Days       | days             | 221.0        |
| Moisture Deficit Wheat    | mm               | 62.0         |
| Moisture Deficit Potatoes | mm               | 41.3         |
| Overall climate ALC Grade | Grade 2          | Grade 2      |

**Table 1 Climatological information<sup>3</sup>**

Overall climate will not result in the most significant limiting factor for this site.

### 2.2. Local climate

Local climate will not result in a significant limiting factor for this site.

### **3 SITE LIMITATIONS**

#### **3.1 Gradient**

The slope measured on the west of the site in the agricultural land was minimal and gradient will not limit the ALC Grade in excess of any other limitations. In the east a slope in excess of 11 degrees was recorded and significant variation in micro relief was noted that would affect farming practices.

#### **3.2 Microrelief**

The microrelief will not result in a significant limiting factor for part of this site.

#### **3.3 Flooding**

A low risk of flooding from surface water and very low risk from rivers and sea has been identified (<https://flood-warning-information.service.gov.uk/long-term-flood-risk>).

Flooding will not result in a significant limiting factor for this site.

## **4 SOIL LIMITATIONS**

### **4.1 Texture and structure**

The soils have been mapped as seasonally wet clayey soils with impeded drainage. The stone content is recorded as slightly stoney. The subsoil structure was medium in the gleyed horizon and generally weak or massive at depth. Little difference in the soils was noted across the site.

The previously mapped soils are of the Brickfield 3 Association and are noted as slowly permeable surface water gleys.

#### **Superficial Geology**

##### ***1:50 000 scale superficial geology description:***

1:50 000 scale superficial deposits description: Till, Devensian – Diamicton

#### **Bedrock Geology**

##### ***1:50 000 scale bedrock geology description:***

1:50 000 scale bedrock geology description: Pennine Lower Coal Measures Formation - Mudstone, Siltstone and Sandstone.

### **4.2 Depth**

Soil depth will not result in a significant limiting factor for this site.

### **4.3 Stoniness**

Stoniness is not a direct significant limiting factor for soils noted on site.

### **4.4 Chemical**

Chemical contamination will not result in a significant limiting factor for this site

## **5. INTERACTIVE LIMITATIONS**

### **5.1 Wetness**

The soils have a slowly permeable layer from below 50 cm with gleying from 25 cm depth.

The combination of a Wetness Class of IV (see Appendix A) in the soils with the Field Capacity Days of 221.0 and a topsoil texture of medium clay loam results in an ALC Grade of 3b for the site.

### **5.2. Droughtiness**

Following assessment of the soil characteristics and climatic factors, the soil was found to have a soil Moisture Balance which subsequently when considered with respect to wheat and potatoes resulted in no significant limiting factor in determining the ALC Grade.

### **5.3 Erosion**

Erosion will not result in a significant limiting factor for this site.

## 6. AGRICULTURAL LAND CLASSIFICATION

### 6.1 Most limiting factor

#### ***Grade 3b land – Wetness Limitation***

The combination of a Wetness Class of IV (see Appendix A) in the soils with the Field Capacity Days of 221.0 and a topsoil texture of medium clay loam results in an ALC Grade of 3b for the site.

#### ***Grade 4 land – Gradient Limitation***

This area has a gradient over 11 degrees intermittently in a zone with a very variable micro-relief. Hence with regard to the gradient and the pattern effect, the area is graded as ALC Grade 4.

### 6.2 Current grading

This survey has resulted in an Agricultural Land Classification of the following grades (Drawing 1):

| Grade                 | ha   | %    | Limitation            |
|-----------------------|------|------|-----------------------|
| 1                     |      |      |                       |
| 2                     |      |      |                       |
| 3a                    |      |      |                       |
| 3b                    | 9.0  | 64.3 | Wetness               |
| 4                     | 3.5  | 25.0 | Gradient/micro-relief |
| 5                     |      |      |                       |
| Non-agricultural land | 1.5  | 10.7 | Woodland              |
| <b>Total</b>          | 14.0 | 100% |                       |

**Table 2. ALC gradings and limitations**

# **DRAWING 1**

**ALC Grade**

**Key**

ALC Grades

- Grade 1
- Grade 2
- Grade 3a
- Grade 3b
- Grade 4
- Grade 5
- Non agricultural land

- Boring
- Pit

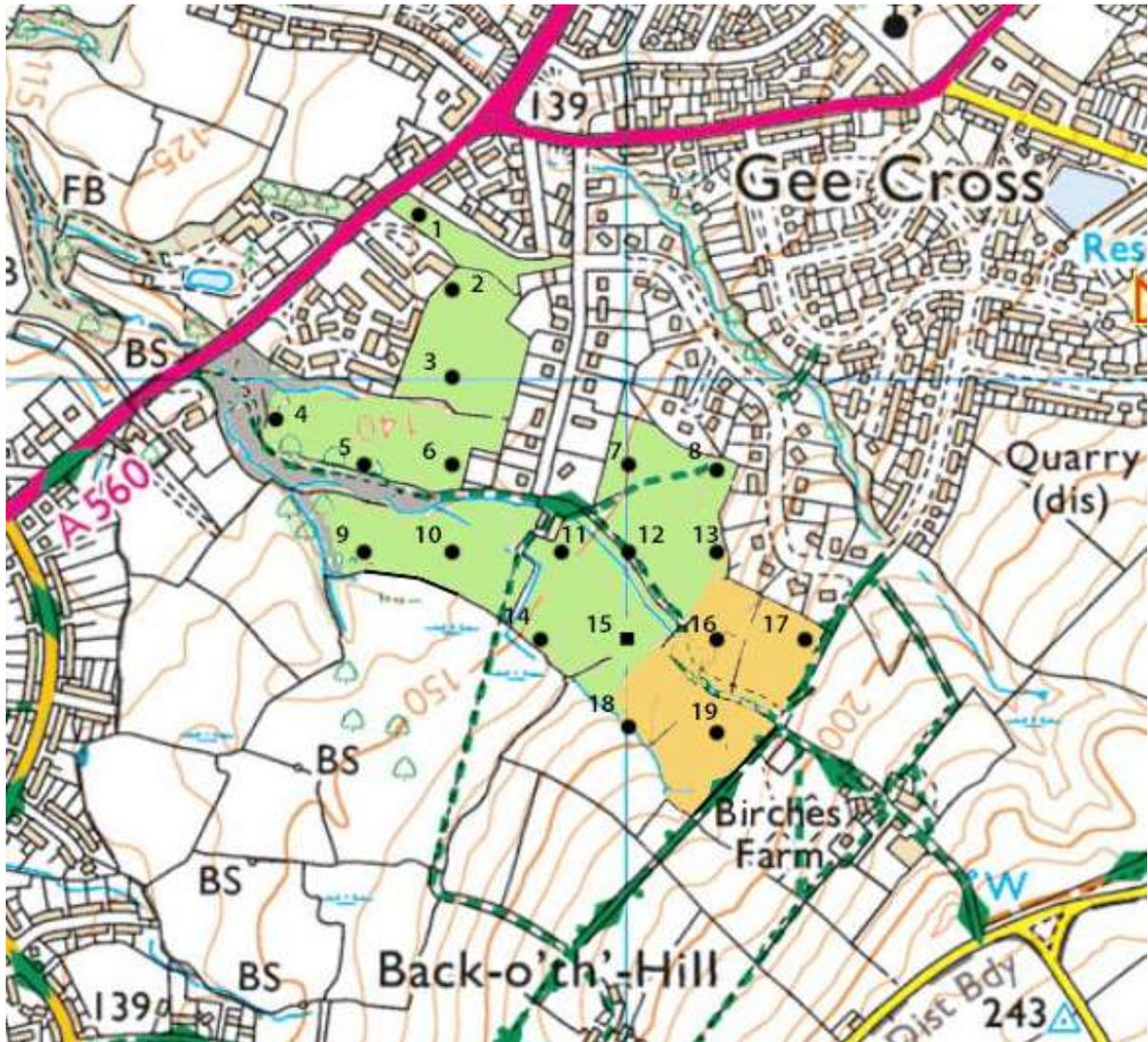
# Soil Environment Services

Drawing Title: ALC Grade

Drawing No.: 1

Scale: NA

Date: 19/08/2020



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# APPENDIX A

## Soil profile data

### Notes

- 1 All abbreviations relating to soil parameters are standard and derived from the guidance documents:  
  
*Agricultural Land Classification of England and Wales*. Revised guidelines and criteria for grading the quality of agricultural land. MAFF. 1988.  
*Soil Survey Field Handbook*. Technical Monograph No.5. Soil Survey of England and Wales.1976.
- 2 The pit data is detailed in this table and information on structure and stone content copied to the boring profiles.
- 3 Any blanks in the cells indicate the data is not needed or appropriate for that cell.
- 4 If 'NA' is inserted in a cell the information is not appropriate on this occasion.
5. Boring or pit locations are directly on the grid reference corresponding to the points on the map unless otherwise stated. A point directly marked on a track, boundary or other feature may be moved 2-3 m off the point.



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## Soil Environment Services Ltd

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### Statement of competence - Agricultural land Classification

SES Ltd undertake several dozen Agricultural Land Classification (ALC) or Land Capability Classifications for Agriculture (LCCA- Scotland) surveys a year and have worked on sites up to 1000 ha including housing, roads, solar farm and mineral extraction developments. We have been undertaking ALC surveys for 25 years and have won many contracts to supply Land Classification reports to local authorities as part of their strategic development plans. A number of our staff have attended the training course Agricultural Land Classification: England and Wales. Working with Soil – The IPSS Professional Competency Scheme. BSSS & DEFRA.

- Fellow of The British Society of Soil Science
- Council Member of The Institute of Professional Soil Scientists for 4 years.
- PhD Soil Physics - Agricultural land drainage - University of Newcastle upon Tyne
- Founder and Managing Director of Soil Environment Services Limited for 25 years.

#### *Selected peer reviewed scientific papers:*

- \* **Soil nitrogen depletion - the threat from soil stockpiling.** Environmental Scientist: Journal of The Institution of Environmental Sciences, 1997.
- \* **Nitrogen loss from a soil, restored after surface-mining.** Journal of Environmental Quality, 1995
- \* **The influence of soil factors on the growth of a grass/clover sward on a restored site in Northumberland.** Grass & Forage Science, 1994.
- \* **The effect of post-restoration cropping regime on some physical properties of a restored soil.** Soil Use & Management, 1994
- \* **Water availability in a restored soil.** Soil Use & Management, 1992.
- \* **A laboratory Method for Investigating the Stabilisation of Mole Channels.** J.Agric.Eng.Res.1991.

## GENERAL INFORMATION SOURCES

1. ***Agricultural Land Classification of England and Wales***. Revised guidelines and criteria for grading the quality of agricultural land. MAFF. 1988.
2. ***Soil Survey Field Handbook***. Technical Monograph No.5. Soil Survey of England and Wales.1976.
3. ***Climatological Data for Agricultural Land Classification***, The Met. Office 1989
4. ***Soil Map of England and Wales: 1:250 000***. Soil Survey of England and Wales, Harpenden.
5. ***Soils and Their Use in Midland and Western England***. Soil Survey of England and Wales,
6. ***Agricultural Land Classification Map*** 1:250 000. MAFF 1983.
7. ***Risk of Flooding***: <https://flood-warning-information.service.gov.uk/long-term-flood-risk>
8. ***Geology of Britain Viewer***. *Reproduced with the permission of the British Geological Survey ©NERC. All rights Reserved*
9. ***Butler, B E. Soil Classification for Soil Survey Monographs on Soil Survey*** (1980) Clarendon Press, Oxford
10. ***Munsell Soil Colour Charts, Munsell Colour, Grand Rapids 1994***.