

AGRICULTURAL LAND CLASSIFICATION  
AND STATEMENT OF PHYSICAL CHARACTERISTICS

Harrycroft Quarry  
South Anston, S Yorkshire

Proposed Limestone  
Quarry Extension

ADAS  
Leeds Regional Office

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1. Agricultural Land Classification
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## 1. INTRODUCTION

1.1 The site is located around National Grid Reference SK 533826, approximately 6 km west-north-west of Worksop. It covers an area of 7.41 ha, all of which is in agricultural use (mainly arable but with some soft fruit production in the southern part of the site). Survey work was carried out in October 1991 when soils were examined by hand auger borings at points pre-determined by the National Grid at a density of one boring per hectare. A number of additional borings were made in order to confirm grade boundaries and two soil pits were dug to collect further information on soil characteristics.

All land quality assessments were made using the methods described in "Revised Guidelines and Criteria for Grading the Quality of Agricultural Land" (MAFF, 1988).

### 1.2 Climate and Relief

Average Annual Rainfall is 637 mm. Accumulated temperature above 0°C between January and June is 1,356 day °C and the land is at field capacity for 136 days a year. There is, thus, no overall climatic limitation on ALC grade.

However, moisture deficits of 102 mm for winter wheat and 91 mm for potatoes indicate a moderate to moderately severe drought risk, especially in the west of the site where the soils are shallow and stony.

### 1.3 Geology

The site is underlain by the Permian Magnesian limestone which occurs close to the surface, especially in the western part of the site. There are no drift deposits on the site.

## 2. AGRICULTURAL LAND CLASSIFICATION GRADES

The ALC grades occurring on this site are as follows:-

Grade/Subgrade	Hectares	Percentage of Total Site Area
2	0.89	11.9
3a	1.26	16.9
3b	<u>5.32</u>	<u>71.2</u>
Total	7.47	100.0

### Grade 2

A small area of Grade 2 land occurs in the east of the site. Soils fall within Wetness Class II and are moderately well drained. Topsoils consist of medium clay loam and overlie medium to heavy clay loam subsoils. These soils are slightly stony (with about 8% medium to large sub-angular and sub-rounded limestones) but relatively deep, with bedrock occurring at depths of between 80 cm and 120 cm. Slight soil wetness and droughtiness are the main factors limiting ALC grade.

### Subgrade 3a

Land in this subgrade occurs in the east. Soils fall within Wetness Class II and are moderately well drained. Topsoils consist of medium clay loam and overlie medium to heavy clay loam subsoils. Profiles are slightly stony (often with about 10% medium to large sub-angular and sub-rounded limestones) and limestone bedrock occurs at depths of around 60 cm. Soil droughtiness is the principal factor limiting ALC grade.

### Subgrade 3b

Land in subgrade 3b covers the western part of the site. Topsoils are formed of well drained (Wetness Class I) medium clay loam which is slightly to moderately stony. Limestone bedrock occurs very close to the surface (often around 25 cm) and severe soil droughtiness is the main limiting factor on ALC grade.

### 3. STATEMENT OF PHYSICAL CHARACTERISTICS

Topsoil and subsoil resources are shown on the accompanying maps along with soil depth and quantity information.

Two main soil types occur on the site.

#### 3.1 Medium textured soils over bedrock

These occur in the west of the site and consist of medium clay loam topsoils which directly overlie limestone bedrock.

##### Topsoils

The topsoil (Unit T1) is common to both soil types on the site. It consists of medium clay loam with a moderately developed medium angular blocky to sub-angular blocky structure. It is 25-30 cm in thickness and slightly stony, with around 10% small to large limestones.

##### Subsoils

No subsoil exists in this soil type and the topsoil directly overlies bedrock.

#### 3.2 Medium textured over heavy textured soils

These occur in the east of the site, where the soils are deeper. Profiles consist of medium clay loam topsoils over heavy clay loam subsoils. The soils are generally slightly stony and limestone bedrock is often found at depths of around 80cm.

##### Topsoils

Topsoils are as already described in Section 3.1

## Subsoils

Subsoils (Unit S1) consist of heavy clay loam with a weakly developed medium sub-angular blocky structure. In places subsoils extend to depths of greater than 1.00 m but in others bedrock occurs at depths of around 80 cm.

#### 4. SOIL PROFILE DESCRIPTIONS

Soil 1 (T1/Bedrock): Medium clay loam over Magnesian Limestone

Land Use: Arable      Slope: 1°E      Location: Near Boring 5

Horizon	Depth (cm)	Description
1	0-30	Dark brown (10 YR 3/4) medium clay loam with 10 YR 4/2 ped faces; no mottles; slightly stony (5-10% small to medium sub-rounded and sub-angular limestones); moist; moderately developed medium angular to sub-angular blocky structure; medium packing density; few fine pores and fissures; moderately firm soil strength; moderately sticky; moderately plastic; many fine and very fine fibrous roots, non-calcareous; abrupt smooth boundary.
2	30+	Weathering limestone bedrock.

Soil 2 (T1/S1): Medium clay loam over heavy clay loam

Land Use: Arable      Slope: 1°E      Location: West of Boring 6

Horizon	Depth (cm)	Description
1	0-25	Dark brown (10 YR 4/2) medium clay loam; no mottles; slightly stony (5-10% small to medium sub-rounded limestone); dry; moderately developed medium angular to sub-angular blocky structure; medium packing density; common fine pores and fissures; moderately weak soil strength; moderately sticky; moderately plastic; common fine and very fine fibrous roots; non-calcareous; abrupt smooth boundary.

Horizon	Depth (cm)	Description
2	25-100	Brown (7.5 YR 5/4) heavy clay loam with 7.5 YR 4/2 ped faces; no mottles; very slightly stony (5% small to medium sub-rounded limestones); weakly developed medium packing density; few coarse pores and fissures; moderately firm soil strength; moderately sticky; moderately plastic; few fine fibrous roots; non-calcareous.



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