

AGRICULTURAL LAND CLASSIFICATION REPORT

AND

STATEMENT OF PHYSICAL CHARACTERISTICS

White Cross Grange  
Doncaster  
(Proposed Tipping Site)

ADAS  
Leeds Regional Office

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CONTENTS

1. Introduction and site characteristics.
2. Agricultural Land Classification.
3. Statement of Physical Characteristics.
4. Soil Profile Descriptions.

MAPS

1. Agricultural Land Classification
2. Topsoil Resources.
3. Subsoil Resources.

## Agricultural Land Classification Report

Proposed Tipping Site at White Cross Grange, Doncaster

### 1.1 Introduction and Site Characteristics

The site is located around grid reference SK562983 adjacent to Junction 2 of the M18/AIM motorways 3 km to the south of Doncaster. It covers 24 ha all of which was in agricultural use.

Survey work was carried out in March 1991 when soils were examined by hand auger borings at 100 m intervals at points pre-determined by the National Grid. A soil profile pit was also dug to assess soil structural characteristics and stone content.

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

#### Land Use

All agricultural land was in arable use at the time of the survey.

### 1.2 Climate

Average Annual Rainfall (AAR) is appropriately 607 mm. Accumulated Temperature above 0°C between January and June (ATO) is 1393°C and the land is at field capacity for 126 days. The rainfall and temperature figures indicate that there is no overall climatic restriction on ALC grade. Moisture deficits of 107 mm for wheat and 99 mm for potatoes, however, indicate that light textured and/or shallow soils will suffer from droughtiness due to the small water holding capacity.

### 1.3 Relief

Average Altitude on the site is 30 m above Ordnance Datum. Slopes are gentle and do not impose any limitation on the ALC grade.

## 1.4 Geology and Soils

The whole site is underlain by Permian Magnesian Limestone. Where this has been quarried and the land restored to agriculture, near Tween Woods Lane and adjoining the M18 embankment, limestone occurs at little more than 30 cm from the surface beneath a medium clay loam topsoil. Elsewhere the limestone is overlain by heavy clay loam drift derived from the Permian marls.

## 2. Agricultural Land Classification

The ALC grades on this site are as follows:-

Grade	Hectares	% of Total Area
2	4.7	36.1%
3a	3.0	23.1%
3b	3.7	28.5%
4	<u>1.6</u>	<u>12.3%</u>
	13.0	100%

### Grade 2

Land in this grade occurs in the western half of the site. Topsoils consist of slightly stony medium clay loam overlying unmottled medium and heavy clay loam subsoils to a depth of 100 cm. Soils of this type are restricted to Grade 2 by slight droughtiness and topsoil stone content.

### Grade 3a

This grade covers the SE quarter of the site. Soils consist of freely drained slightly stony medium clay loam topsoils over unmottled medium or heavy clay loam subsoils to a depth of 80 cm, below which is limestone. Droughtiness is increased by the slightly shallower soil depth, compared with the Grade 2 land. Stone content is also greater and this part of the site is placed within subgrade 3a for these reasons.

### Grade 3b

This grade covers the north eastern part of the site. Profiles are formed of medium clay loam topsoils over medium clay loam subsoils to a depth of 55 cm, or slowly permeable heavy clay loam to a depth of 100 cm. This area is restricted to sub grade 3b by a combination of shallow rooting depth, which will result in appreciable droughtiness and stoniness.

### Grade 4

The poorest land is restricted to two areas, on the eastern and western edges of the site. Both contain compacted medium clay loam topsoils to a depth of only 30 cm over the Magnesian limestone and have been formed by restoration of previously quarried areas. Both areas are restricted to Grade 4 by droughtiness caused by a combination of shallow soil depth and compaction which restricts rooting.

## 3. STATEMENT OF PHYSICAL CHARACTERISTICS (SOIL PROPERTIES AND RESOURCES)

### 3.1 Soil Profiles

Two soil types occur on this site.

(i) Deep medium clay loam over medium clay loam or heavy clay loam soils.

These occur in the western half of the site; slightly stony medium clay loam topsoils pass into unmottled medium clay loam or heavy clay loam subsoils.

(ii) Shallow limestone soils

These occur in the east and west of the site in areas underlain by limestone bedrock. They consist of medium clay loam to a depth of 35 cm over fragmented weathered limestone.

### 3.2 Soil resources

The topsoil and subsoil resources on the site are shown on the accompanying maps along with the soil depth information.

#### Topsoils: Unit T1

This consists of medium clay loam, unmottled and slightly stony; optimum thickness is 35 cm. Structure is moderately developed angular blocky.

#### Subsoils

(There are no subsoils in parts of the east and west of the site, where topsoils rests directly on weathered limestone bedrock.)

#### Subsoil Unit S1

This unit is medium to heavy in texture and is unmottled. It occurs in the western part of the site and structure is moderately developed angular blocky. Mean thickness is 70 cm.

#### Sub Unit S1A

This unit occurs in the central part of the site and is medium to heavy in texture, unmottled and stoneless. Structure is moderately developed angular blocky and mean thickness is 40 cm.

4. SOIL PROFILE DESCRIPTION

Table 1 Medium clay loam over medium silty clay loam: Pit 1

White Cross Grange, Doncaster

Proposed Tipping Site

Crop: Permanent Pasture

Slope: 0°S

Weather: Sunny

Depth cm

- 0-20 Very dark greyish brown (10YR 3/2) medium clay loam; unmottled; slightly stony; moderately developed angular blocky structure; moderately weak; soil strength, slightly sticky; slightly plastic; many fine fibrous roots; very fine micropores; abrupt smooth boundary; non calcareous.
- 20-100 Dark yellowish brown (10YR 4/4), medium silty clay loam; unmottled; stoneless; moderately developed angular blocky structure; moderately weak soil strength slightly sticky; slightly plastic; common fine fibrous roots; fine micropores; non calcareous.