4105/041/92

East Sussex Minerals Plan
Stantons Farm, Near Plumpton
East Sussex
ALC Map and Report
July 1992

AGRICULTURAL LAND CLASSIFICATION

EAST SUSSEX MINERALS PLAN

STANTONS FARM, NEAR PLUMPTON

1. INTRODUCTION

1.1 In July 1992, an Agricultural Land Classification survey (ALC), was carried out on 17.55 hectares of land at Stantons Farm, east of Ditchling, in East Sussex. ADAS was commissioned by MAFF to determine the quality of land affected by the proposal to include this site as part of the East Sussex Minerals Plan.

1.2 The work was carried out by members of the Resource Planning Team within the Guildford Statutory Group, at a detailed level of approximately 1 boring per hectare. A total of 18 borings and two soil pits were described using MAFF's revised guidelines and criteria for grading the quality of agricultural land (MAFF, 1988). These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose long term limitations on its agricultural use.
At the time of survey the land was in permanent pasture.

1.3 The distribution of the grades and subgrades is shown on the attached ALC map, and the area of each grade and subgrade is given in the table below. The map has been drawn at a scale of 1:5,000. Any enlargement of this scale would be misleading.

Distribution of Grades and Subgrades

Grade	Area (ha)	% of total agricultural land
2	3.67	21
3a	4.62	26
3b	9.26	53
Total Agricultural Area	17.55	100
Total Area of site	17.55	

1.4 Grades 2, 3a, and 3b have been mapped at this site. The higher quality grade 2 and 3a land is limited by minor droughtiness, and/or wetness limitations due to the sandy nature of the soils, along the south-eastern edge of the site, or where slowly permeable horizons occur deep in the profile. Grade 3b land is limited by wetness as a result of the combination of shallow slowly permeable horizons in the profile and a high field capacity day range.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

Relief

2.1 The site lies at an altitude of 45-55m AOD. The highest land occurs towards the north-west and south of the site, the land falling gently in a north-easterly direction. Nowhere on the site does gradient or altitude represent a significant limitation to agricultural use.

Climate

2.2 Estimates of climatic variables relevant to the assessment of agricultural land quality, were obtained by interpolation from a 5km grid dataset (Met. Office, 1989) for a representative location in the survey area.

Climatic Interpolation

Grid Reference	TQ369146
Altitude, (m AOD)	45
Accumulated Temperature (°days, Jan-June)	1483
Average Annual Rainfall (mm)	901
Field Capacity Days	189
Moisture deficit, wheat (mm)	104
Moisture deficit, potatoes (mm)	97

2.3 There is no overall climatic limitation at this locality. However, it should be noted that average annual rainfall and field capacity days are relatively high, whilst moisture deficits are low, in a regional context. These factors will interact with soil factors to influence soil wetness and droughtiness limitations.

Geology and Soils

2.4 British Geological Survey, Sheet 318/333, Brighton and Worthing (1984) shows a complex pattern of geology underlying the site. Folkestone Beds and Lower Greensand deposits of Cretaceous age have been mapped across much of the site. These are overlain by Head deposits across parts of the site, particularly towards the north-east and south-west.

2.5 Soil Survey of England and Wales, Sheet 6, Soils of South-East England (1983) shows the entire site to comprise soils of the Kingston Series. These soils are described as 'typical stagnogley soils which have grey and ochreous mottled fine loamy upper layers over clayey subsoils', (SSEW, 1984). These soils are poorly drained and prone to seasonal waterlogging. Soils of the Kingston Series are vulnerable to damage from untimely cultivations or grazing and opportunities for spring landwork are restricted, particularly in East Sussex, where the climate is relatively wet.

2.6 Detailed field examination of the soils on the site indicates the presence of soils similar to those described by the Soil Survey, although better drained and/or more sandy variants were also observed.

3. AGRICULTURAL LAND CLASSIFICATION

3.1 The ALC grading of the site is primarily determined by the interaction between soil and climatic factors giving rise to soil wetness and droughtiness limitations.

Grade 2

3.2 Land of this quality is associated with deep, relatively well drained soils which have minor wetness and droughtiness limitations. The land to the west of the site, graded 2, has slightly different characteristics to that at the south-east of the site, assigned to the same grade.
At the west of the site, profiles comprise fine sandy loam topsoils which are non-calcareous and may contain 2-5% flints by volume. These overlie similar upper subsoils, but tend to become heavier with depth, passing through medium or sandy clay loam to heavy clay loam and clay in the lower subsoil. Gleying was evident from about 58 cm whilst the lower subsoil below about 75 cm was found to be slowly permeable. Profiles are thus assigned to wetness class II and in this area of relatively high field capacity days grade 2 is appropriate.
At the south-eastern corner of the site, profiles tend to have heavier topsoils and upper subsoils than those soils described above, but become more sandy with depth. Typically non-calcareous medium clay loam topsoils which may be very slightly stony, overlie medium or heavy clay loam upper subsoils but pass to sandier textures of sandy clay loam, sandy loam or loamy sand in the lower subsoil. Profiles may be gleyed below about 55 cm but are not slowly permeable and are therefore appropriate to wetness class I. However, the combination of a relatively moist climatic regime with clay loam topsoils give rise to a slight workability restriction such that grade 2 is appropriate. Given the sandy nature of the subsoils, this land is also prone to a slight soil droughtiness limitation.

Grade 3a

3.3 Land of this quality is principally limited by a slight risk of soil droughtiness, although occasional profiles were found to be mainly limited by soil wetness.
Profiles typically comprise medium or sandy clay loam topsoils which are non-calcareous and only very slightly stony (ie, 0-2% flints by volume). These overlie similar upper subsoils and then typically pass to sandier textures, such as medium sandy loam, loamy medium sand or medium sand in the lower subsoil. Occasional profiles became heavier with depth passing to heavy clay loam or clay in the lower subsoil. Profiles pass to heavier textures with depth, they are gleyed and slowly permeable from just below 40 cm, (wetness class III) and assigned to grade 3a as a result of a wetness limitation. Overall, though this land is limited by slight soil droughtiness arising from the combination of freely draining, sandy soils and the prevailing climatic regime.

Grade 3b

3.4 Land of this quality is most extensive across this site and is limited by moderate soil wetness and workability resulting from the combination of soil drainage status, soil textures and climatic factors.
Profiles comprise non-calcareous, stoneless medium clay loam topsoils which overlie similar textures or heavy clay loam in the upper subsoil and pass to clay in the lower subsoil. All profiles are gleyed within 40 cm depth and were found to be slowly permeable between 35 and 50 cm depth. Natural drainage of these soils is restricted by the slow permeability of the subsoil such that wetness class IV is appropriate, which equates with subgrade 3b given the prevailing climatic regime and topsoil textures. This soil water regime may adversely affect plant growth or impose restrictions on cultivations or grazing by livestock such that the land is capable of producing moderate yields of a narrow range of crops, principally cereals and grass.

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RESOURCE PLANNING TEAM
ADAS Reading

SOURCES OF REFERENCE

- BRITISH GEOLOGICAL SURVEY (1984) Sheet 318/333, Brighton and Worthing.

- MAFF (1988) Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land.

- METEOROLOGICAL OFFICE (1989) Climatological datasets for Agricultural Land Classification.

- SOIL SURVEY OF ENGLAND AND WALES (1983) Sheet 6, Soils of South-East England and accompanying bulletin 15 (SSEW, 1984).