

EAST SUSSEX MINERALS PLAN
HAYLEIGH FARM

ALC MAP AND REPORT
JULY 1992

AGRICULTURAL LAND CLASSIFICATION

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1. INTRODUCTION

- 1.1 In July 1992, an Agricultural Land Classification survey (ALC), was carried out on 21.45 hectares of land at Hayleigh 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 scale 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 limitations impose long term limitations on its agricultural use.
At the time of survey most of the site was under wheat, whilst land to the far west was in permanent grassland.
- 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

<u>Grade</u>	<u>Area (ha)</u>	<u>% of total agricultural land</u>
3a	3.5	17
3b	7.45	35
4	10.2	48
Total Agricultural Area	<u>21.2</u>	<u>100</u>
Non-Agricultural	0.25	
Total Area of site	<u>21.45</u>	

- 1.4 Grades 3a, 3b and 5 have been mapped at this site. The higher quality grade 3a land is limited by minor droughtiness, and/or wetness limitations due to the sandy nature of the soil or where slowly permeable horizons occur deep in the profile. Grade 3b land is limited by wetness as a result of shallow slowly permeable horizons in the profile. The remaining area is graded 4. Land of this quality is limited by both wetness and workability, as a result of heavy topsoils over gleyed and slowly permeable clay at shallow depths.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

Relief

- 2.1 The site lies at an altitude of 55-65 m AOD, falling very gently from the south east towards the north west. Nowhere on the site does gradient or altitude represent a significant limitation to agricultural land quality.

Climate

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

Climatic Interpolations

Grid Reference	TQ 339 150	TQ 346 150
Altitudes (m, AOD)	55	60
Accumulated Temperature (°days, Jan-June)	1472	1466
Average Annual Rainfall (mm)	934	936
Field Capacity Days	195	196
Moisture deficit, wheat (mm)	102	101
Moisture deficit, potatoes (mm)	94	93

- 2.3 The important parameters in assessing an overall climatic limitation are average annual rainfall, a measure of overall wetness, and accumulated temperature, a measure of the relative warmth of a locality. Although there is no overall climatic limitation affecting this site, average annual rainfall and field capacity days are high in a regional context. This will increase the risk of soil wetness and workability limitations.

Geology and Soils

- 2.4 British Geological Survey, (1984) Sheet 318/333, Brighton and Worthing shows a complex pattern of geological deposits across the site which includes Gault Clay, Folkestone Beds, Lower Greensand deposits and Recent Head deposits. The Cretaceous strata run approximately east-west, Lower Greensand deposits adjacent to the northern site boundary, Folkestone Beds occurring through the centre of the site, and Gault Clay towards the far south. Drift deposits of Head overlie these strata in places, mainly towards the western half of the site.
- 2.5 Soil survey of England and Wales, (1983) Sheet 6, Soils of South-East England shows the entire site to comprise soils of the Kingston Association. These soils are described as 'typical stagnogleys which have grey and ochreous mottled fine loamy upper horizons over clayey subsoils', (SSEW, 1984).
- 2.6 Detailed field examination of the soils on the site indicates the presence of soils similar to those described by the Soil Survey, ie, deep clayey soils of moderate to poor drainage status.

3 AGRICULTURAL LAND CLASSIFICATION

- 3.1 The ALC grading of this site is primarily determined by the interaction between soils and climatic factors giving rise to soil wetness and/or droughtiness limitations. Soil wetness is the principal limitation affecting the land on this site, although occasionally droughtiness is overriding.

Grade 3a

- 3.2 Within the single grade 3a mapping unit, two different soil types were identified each giving rise to different profile characteristics and different limitations to agricultural use, but of a similar degree. Towards the north of the unit profiles are of a sandy nature and as such are limited by slight soil droughtiness. Very slightly stony, (ie, 1-2% flints by volume), non calcareous medium sandy loam topsoils overlie similar textures or sandy clay loam or loamy medium sand in the subsoil. Profiles are affected by a high groundwater table as evidenced by gleying from just below the topsoil, but were not found to be slowly permeable and are thereby assigned to wetness class I or II. The land is limited though by a slight risk of soil droughtiness arising from the combination of sandy soil textures and climatic factors. Towards the south of the 3a mapping unit heavier soils were encountered whose principal limitation is that of soil wetness. Medium sandy loam topsoils which are non-calcareous and only very slightly stony rest over medium clay loam upper subsoils which may be gleyed and pass to gleyed and slowly permeable clay around 63 cm depth. Wetness class III is therefore appropriate, which in this climatic regime and with light topsoil textures, equates to subgrade 3a, good quality agricultural land.

Grade 3b

- 3.3 The situation is similar for land assigned to this grade as that for grade 3a land, in that land quality is influenced by one or other of two limitations, namely soil wetness or droughtiness. Where soil wetness is the principal limitation profiles typically comprise medium or heavy clay loam topsoils overlying similar upper subsoils passing to clay or passing directly into clay from below the topsoil. Profiles are non-calcareous throughout and are typically very slightly to slightly stony, containing between 1 and 10% flints by volume. Occasional profiles were impenetrable (to soil auger) at depth due to stones and/or very dry and compacted subsoil conditions. Gleying was evident at varying depths between about 28 and 55 cm, this being directly associated with horizons of slowly permeable clay. Wetness class III or IV is assigned to these soils depending on depth to gleyed and slowly permeable layers. These drainage characteristics combine with medium or heavy topsoil textures to give rise to a moderate soil wetness/workability limitation. Occasional profiles were found to be limited to subgrade 3b on the basis of moderate soil droughtiness risk. Medium sandy loam or loamy medium sand topsoils overlie similar textures or medium sand in the subsoil. These soils were extremely dry and compacted and there was evidence of only shallow rooting by plants. Reserves of available water in these profiles are insufficient to support healthy crop growth and the risk of soil droughtiness and drought stress on crops is significant.

Grade 4

3.4 All land assigned to this grade suffers a severe wetness/workability limitation to its agricultural use.

Non calcareous heavy clay loam or clay topsoils overlie similarly textured subsoils which are gleyed and slowly permeable at shallow depths within 40 cm. Natural drainage of this land is severely impeded and it is therefore assigned to wetness class IV. These drainage characteristics combine with heavy topsoil textures and a relatively moist climatic regime (ie, high annual rainfall and high field capacity days), to result in land affected by a severe wetness/workability limitation.

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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) Climatic datasets for Agricultural Land Classification.
- Soil Survey of England and Wales (1983) Sheet 6, Soils of South-East England.
- Soil Survey of England and Wales (1984) Bulletin 15, Soils and their use in South-East England.