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AGRICULTURAL LAND CLASSIFICATION

CHERWELL LOCAL PLAN

GREEN HILL FARM, ADDERBURY, OXFORDSHIRE

1 Introduction

1 1 In October 1992 an Agricultural Land Classification (ALC) survey was undertaken on approximately 15 ha of land at Adderbury to the south of Banbury Oxfordshire ADAS was commissioned by MAFF to determine the quality of land affected by proposals to include this site in the Cherwell Local Plan

1 2 The survey was undertaken at a detailed level of one boring per hectare A total of 16 auger boring samples and two soil inspection pits were described in accordance with 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 to its agricultural use

At the time of survey the land was in arable use

1 3 The distribution of grades and sub-grades is shown on the attached ALC map and the areas are given in the table below The map has been drawn at a scale of 1 5000 It is accurate at this scale but any enlargement may be misleading

Distribution of Grades and Sub-grades

	Area (ha)	% total agricultural land
Grade 2	7 98	56
3a	6 02	43
3b	0 12	1
Total agricultural area	14 12	100
Non-agricultural	1 08	
Total area of site	15 20	

1 4 Appendix 1 gives a general description of the grades and land use categories identified in this survey

1 5 The site comprises very good to moderate quality agricultural land Soils have developed principally over deposits of Jurassic Marlstone (ironstone) Rockbed The resultant profiles tend to be medium textured well drained resting over brashy weathered ironstone at variable depths Soils across the upper slopes tend to be shallower over ironstone than those over the mid slopes where deposits of

Jurassic clays silts and silt stones have been identified (BGS 1968) and thereby suffer from a moderate drought risk whilst across the remainder of the site there is only a slight droughtiness limitation A small unit of sub-grade 3b has been mapped where the land was particularly poorly drained as a result of a wet flush

2 PHYSICAL FACTORS AFFECTING LAND QUALITY

Relief

2 1 The site lies at an altitude of 95 to 100 m A O D the highest land occurring towards the north-east and falling gently to the west and south-west Gradients of 5-6 were measured across the westernmost part of the site However this does not represent a limitation to agricultural land quality and neither does altitude

Climate

2 2 Estimates of climatic variables relevant to the assessment of agricultural land quality were obtained by interpolation from a 5 km grid dataset (Met Office 1989) for representative locations in the survey area

Climatic Interpolation

Grid Reference	SP 471 360	SP 471 362
Altitude (m AOD)	90	105
Accumulated Temperature (days Jan-June)	1398	1381
Average Annual Rainfall (mm)	683	686
Field Capacity Days	153	154
Moisture deficit wheat (mm)	103	102
Moisture deficit potatoes (mm)	94	92

2 3 Climate does not represent a limitation to agricultural land quality at this locality However climatic factors specifically field capacity days and crop adjusted soil moisture deficits do interact with soil factors to influence soil wetness and droughtiness limitations Soil droughtiness is of particular relevance on this site

Geology and Soils

2 4 British Geological Survey Sheet 218 Chipping Norton (1968) shows the majority of the site to be underlain by Jurassic Marlstone Rockbed deposits with Jurassic clays silts and silt stones occurring along the western and southern parts of the site on the valley sides

2 5 Soil Survey of England and Wales sheet 6 Soils of South-East England (1983) indicates the presence of one mapping unit the Banbury association across the entire site

These ferritic brown earths are described as being stony well drained fine and coarse loamy soils resting on shattered ironstone at moderate depths (SSEW 1984)

2 6 In general terms detailed field examination of the site indicates the presence of soils similar to those mapped by the Soil Survey across the higher land on the site above about 105 m However deeper more clayey profiles with slight drainage imperfections were found to occur across the lower slopes particularly towards the southern boundary of the site

3 AGRICULTURAL LAND CLASSIFICATION

3 1 The ALC grading of the site is primarily determined by the interaction between soils and climatic factors giving rise to a soil droughtiness limitation ALC grades 2 3a and 3b have been mapped in addition to areas of land in non-agricultural use

3 2 Grade 2

This very good quality agricultural land occurs principally across the mid to lower slopes of the site although a small unit of grade 2 has been mapped in the north eastern corner

Profiles typically comprise non-calcareous medium clay loam topsoils which may contain between 2 and 5% brashy ironstone fragments <2 cm Upper subsoils may be of similar texture although more usually subsoils were found to pass to heavy clay loam sandy clay loam or clay textures Subsoils tend to be slightly to extremely stony having between 10 and 80% brashy ironstone by volume increasing with depth Where stone contents exceed 50% profiles are usually impenetrable (to soil auger) i e between 75 and 95 cm although occasional profiles extend to at least 120 cm These soils are well drained wetness class I Occasional profiles were found to be gleyed but not slowly permeable below about 50 cm

The land is limited by a minor risk of droughtiness as a result of subsoil ironstone contents causing a reduction in soil moisture reserves available for plant growth

3 3 Grade 3a

This good quality agricultural land is associated with soils which have developed over Jurassic Marlstone Rockbed deposits and occur across the upper slopes on the site

Profiles are similar to those assigned to grade 2 although generally more brashy and/or shallower over impenetrable ironstone Non-calcareous medium clay loam topsoils which may be very slightly stony (having 2-5% ironstone by volume) overlie similar textures heavy clay loam or clay in the subsoil generally becoming heavier with depth Subsoils contain between 10 and 80% by volume ironstone brash and typically become impenetrable (to soil auger) over extremely brashy horizons between about 40 and 75 cm

Profiles with such stone contents are prone to a slight drought risk at this locality as a result of the interaction between soil moisture deficits and the available water capacity of the soil Crops may therefore suffer slight drought stress thereby limiting the agricultural land quality to sub-grade 3a

3 4 Grade 3b

A very small unit of sub-grade 3b has been mapped in association with a particularly poorly drained wet flush/spring in the southernmost field on the site This small area is subject to a moderate wetness limitation

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Resource Planning Team
ADAS Statutory Group
Reading

SOURCES OF REFERENCE

- BRITISH GEOLOGICAL SURVEY (1968) Sheet 218 Chipping Norton

- 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

- SOIL SURVEY OF ENGLAND AND WALES (1984) Bulletin 15 Soils and their use in South-East England