

AGRICULTURAL LAND CLASSIFICATION

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1.0 THE AGRICULTURAL LAND CLASSIFICATION SYSTEM

1.1 The Agricultural Land Classification (ALC) system grades land according to the degree to which its physical characteristics impose long term limitations to agricultural use. The main physical factors which are taken into account are climate, site and soil. These may act separately, or in combination to result in varying degrees of constraint on agricultural production. Less permanent factors such as size, structure and location of farms, the standard of fixed equipment and the accessibility of land do not affect grading, although they may influence land use decisions. In all instances a good, but not outstanding standard of management is assumed.

1.2 The fewer long term limitations there are to agricultural use, the higher the grade of land. Five main grades of land are recognised ranging from Grade 1 land of excellent quality to grade 5 land of very poor quality. Grade 3 land which constitutes about half of the agricultural land in England and Wales is now divided into 2 subgrades designated 3a and 3b. A full description of the ALC system and of the grades and subgrades are contained in MAFF publication "Agricultural Land Classification of England and Wales, revised guidelines and criteria for grading the quality of agricultural land" (MAFF, 1989). This publication forms a core document of this inquiry.

2.0 BACKGROUND TO THE SITE

2.1 This 174.5 hectare site was initially inspected during the summer of 1987, and was subsequently revisited, following the introduction of revised guidelines and criteria for assessing the quality of agricultural land, in late 1988. A total of 98 soil inspections were made on site, supplemented by observations from one soil profile pit.

2.2 At the time of survey the majority of the site was under grass. Smaller areas in the vicinity of Grange Farm and Mitchell's Farm were under mixed arable crops and part of Lazier Fen was supporting more intensive horticultural production.

3.0 PHYSICAL FACTORS AFFECTING LAND QUALITY

Relief and Drainage

- 3.1 The highest ground at just over 11 metres AOD occurs in the vicinity of Mitchell's Farm in the northwest corner of the site. From this point the land falls southward to New Cut Drain (altitude 4 metres AOD), then very gently southwards and eastwards, to a minimum altitude of approximately 1 metre AOD in the vicinity of Lazier Fen.
- 3.2 Much of the land is pipe drained, and groundwater levels in the more lowlying fen areas are controlled by ditches and pumps.

Climate

- 3.3 Site - specific climate data has been obtained from the 5km grid data set produced by the Meteorological Office (Met Office, 1989). This shows annual average rainfall to be approximately 546mm (21.8 inches) which is low by national standards.

Soils are likely to be a field capacity for a relatively short period of approximately 92 days between mid March and mid December. The workability of slowly permeable soil types will be impaired during this period.

- 3.4 The accumulated temperature for this area is approximately 1456 degrees celsius. The parameter indicates the cumulative build up of warmth available for crop growth and has an influence on the development of soil moisture deficits* Meteorological Office data indicates that soil moisture deficits in the order of 122mm for wheat and 119 mm for potatoes are likely to occur. These figures are slightly higher than average for lowland England. In order to counter the effects of these deficits (in terms of drought stress on crops) it is necessary for soils to hold adequate reserves of plant available water.

* SMD represents the balance between rainfall and potential evapotranspiration occurring during the growing season. For ALC purposes the soil moisture deficits developing under a winter wheat and maincrop potato cover are considered. These 'reference' crops have been selected because they are widely grown, and in terms of their susceptibility to drought, are representative of a wide range of crops.

Geology and Soils

- 3.5 The geology of this area is mapped on the 1:50,000 scale solid and drift edition geology map, sheet number 188 (Geol. Surv. 1981). This shows the solid geology of the site to mainly comprise Kimmeridge Clay. On the higher ground, specifically in the immediate vicinity of Red Hill Farm and Mitchell's Farm, the clay is overlain by deposits of Lower Greensand which extend northwards, off site. On the lowlying land in the vicinity of Lazier Fen, the solid geology is masked by more recent spreads of first terrace river gravels.
- 3.6 Field survey observations support this general description and indicate that superficial deposits of peat also occur in the vicinity of Lazier Fen. Two main soil types have been identified on site which correlate fairly closely with the underlying geology:
- 3.7 Over the majority of the site soils have developed directly from the underlying Kimmeridge Clay. Profiles are fairly uniform in nature and typically comprise of non calcareous clay topsoils over similar subsoils which may become slightly or moderately calcareous at depth. Profiles are typically stoneless and drainage is assessed as wetness class III.
- Variations of this key soil type occur in two main locations:
- 3.8 Firstly, on the higher ground west of Red Hill Farm and Mitchell's Farm, where clayey soils occur which are calcareous throughout the profile.
- 3.9 Secondly, towards the northern and eastern edges of Lazier Fen, where the overlying peat deposit has wasted, and has progressively become incorporated into the underlying Clay to give soil variants with organic clay surface horizons.
- 3.10 The second main soil type occurs towards the south and west of Lazier Fen where soils have developed in wasted peat overlying first terrace river gravels. Soils in this area typically comprise organic clay topsoils overlying subsoils of clay loam or sandy clay loam which may contain sand or clay lenses at depth. Profiles are typically non calcareous, stoneless or slightly stony and are assessed wetness II.

4.0 AGRICULTURAL LAND CLASSIFICATION

4.1 The site is predominantly graded 3b, with smaller areas of 3a and 2. A breakdown of agricultural land quality in hectares and percentage terms is provided below:

ALC	Ha	%
2	5.3	3.0
3a	32.7	18.8
3b	127.2	72.9
Agricultural Bldgs & Non Agricultural	9.3	5.3
Total	<hr/> 174.5 <hr/>	<hr/> 100.0 <hr/>

Grade 2

4.2 This occurs in an area of skirtland soils in the southwest corner of the site. Soils in this area have developed in wasted peat overlying spreads of first terrace river gravels and are more fully described in para 3.10. The clay content of topsoils within this area is high and this factor in combination with slightly reduced subsoil permeability results in minor wetness and workability constraints which are only partly offset by the ameliorating effect of enhanced levels of topsoil organic matter. Individual profiles of particularly light textured and/or stony soils may also be limited by slight summer droughtiness constraints. With good management however, this land remains capable of producing high yields of a wide range of crops.

Subgrade 3a

This is mapped in two main locations:

4.3 To the north of the site subgrade 3a occurs in an area of calcareous clayey soils which are more fully described in paragraphs 3.7 and 3.8. The presence of calcium carbonate within the soil profile promotes the development of more stable soil structures, facilitating soil drainage, and improving root development. However, the soils remain slowly

permeable, and heavy textured within the topsoil, consequently the land remains limited by seasonal wetness and workability constraints.

- 4.4 To the south of the site subgrade 3a is mapped in on an area of organic clayey soils which are more fully described in paragraphs 3.7 and 3.9. Although the workability of this land is improved by enhanced levels of topsoil organic matter, the clayey nature of the topsoil in combination with slow subsoil permeability prevents a grading of 2 on land of this type. Seasonal wetness continues to impose the chief constraint on agricultural use.

Subgrade 3b

- 4.5 This occurs extensively in the central part of the site in areas of non calcareous clayey soils derived directly from the underlying Kimmeridge Clay (see paragraph 3.7). Soils in these areas do not benefit from enhanced levels of topsoil organic matter and have less stable soil structures than their calcareous counterparts to the north. The land is consequently limited by more severe wetness and workability constraints.

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