

AGRICULTURAL LAND CLASSIFICATION

SCOTLAND FARM, DRY DRAYTON, CAMBRIDGESHIRE

1.0 THE AGRICULTURAL LAND CLASSIFICATION SYSTEM

1.1 Agricultural Land Classification (ALC) assesses land quality based on its long term physical potential. The ALC system grades land according to the degree to which its inherent physical characteristics impose long term limitations to agricultural use.

1.2 The main physical factors which are taken into account in assessing ALC grade are climate, site and soil. They may act singly, or in combination to result in varying degrees of constraint to agricultural use. The ALC grade is determined by the most limiting factor present.

1.3 Five main grades of land are recognised ranging from grade 1 land of excellent quality to grade 5 land of very poor quality. Other issues, such as the location of farms, the standard of fixed equipment and the accessibility of land do not affect grading although they may influence land use decisions.

2.0 BACKGROUND TO THE SITE

2.1 This 280 hectare site was inspected in spring 1988 in connection with proposals to develop a new residential settlement with supporting amenities.

2.2 On the published 1:63,360 scale ALC map sheet 135 (MAFF 1971) the land is shown as grade 2 with small areas of grade 3 along the Callow Brook. The current survey was undertaken to provide a more detailed ALC of the Scotland Farm site.

2.3 At the time of survey the majority of land was in arable use including crops of winter cereals, oilseed rape and beans.

3.0 PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

- 3.1 The Dry Drayton area is one of low rainfall by national standards, having an estimated annual rainfall of 561 mm (22.4 inches) (Met. Office, 1988), which is relatively uniformly distributed throughout the year. Field capacity days, at 92 per annum, are correspondingly low. This dry climate increases the opportunities for landwork on the heavy soils which characterise the site, but also contributes to a potential droughtiness limitation. As soil moisture deficits of 114 mm and 108 mm are recorded for wheat and potatoes respectively, it is consequently essential that soils hold adequate reserves of available water.
- 3.2 The Dry Drayton area lies within Agroclimate area 28 (MAFF, 1984) which has an average growing season of 249 days, extending from late March to late November.
- 3.3 The site's climatic characteristics do not impose any limitation in terms of ALC GRADE.

Altitude and Relief

- 3.4 The site is gently undulating and lies at altitudes within the range of 50-70 m AOD, with the highest ground occurring along the A45 (T) road at the southern boundary of the site. The land has an overall northerly aspects and is dissected by two small brooks flowing north, creating small, shallow valleys across the site. Gradient and altitude are not limiting factors in terms of the ALC assessment of the site.

GEOLOGY AND SOILS

- 3.5 The published geological map for the Huntingdon area (Geol. Surv, 1975) indicates that glacial boulder clay deposits underlie the majority of the site. A small area of Gault Clay is shown to occur in the north of the site along Callow Brook.

- 3.6 The soil survey have mapped the "Soils of Eastern England" at a scale of 1:250,000 and this map shows the occurrence of the Hanslope Association* on the boulder clay plateau.
- 3.7 During the current survey a more detailed inspection of the soils indicated that boulder clay soils are widely occurring. They typically comprise calcareous medium clay topsoils either directly overlying chalky boulder clay, or over an upper subsoil of calcareous clay passing into clay with chalk or chalky boulder clay at varying depths. Where present, in the subsoil, chalk fragments promote fissuring and a stable soil structure which aids aeration and root development.
- 3.8 Some lighter textured, more permeable soils derived from Head deposits occur in the shallow valleys. These soils results from downwash of fine soil particles from higher ground and typically comprise clay loam or fine sandy clay loam topsoils over similar subsoils which only occasionally overlie calcareous clay at depth.
- 3.9 The drainage status of the land varies from moderately well drained (wetness class II) on the lighter textured soil variants, to imperfectly drained (wetness class III) on the heavier more slowly permeable soil types. Workability imperfections consequently form the main limitation to agricultural land quality although minor droughtiness constraints also occur in this low rainfall area.

* Hanslope Association: slowly permeable calcareous clayey soils, permeable non-calcareous clayey soils. Slight risk of water erosion.

4.0 AGRICULTURAL LAND CLASSIFICATION

4.1 The definitions of the ALC grades are included in Appendix 1.

4.2 The table below shows a breakdown of the ALC grades for the survey area.

Grade	(Agricultural Land Classification)		
	ha	% (area surveyed)	% (total site area)
2	65.3	23.6	21.6
3a	202.5	73.4	66.8
Non agricultural	8.2	3.0	2.7
<hr/>			
	276.0	100.0	
<hr/>			
Land not surveyed	27.0		8.9
<hr/>			
GRAND TOTAL	303.0		100.0
<hr/>			

5.0 GRADE 2

5.1 Land of this quality is associated with the better drained soil variants on site. These are typically, but not exclusively located in the small shallow valleys that run across the site from south to north. Soils in these valley features are mainly derived from the lighter textured, moderately well drained (wetness class II) Head deposits and typically comprise of fine sandy clay loam or clay loam textures to depth.

5.2 Land graded 2 is also mapped in small areas on the plateau where moderately well drained (wetness class II) calcareous clayey soils overlie chalky clay or chalky boulder clay at depth.

5.3 Land of the above type is principally limited by minor wetness and workability imperfections which derive from reduced subsoil permeability at depth in the soil profile combined with the relatively heavy nature of the topsoils. This, together with the slight risk of droughtiness in this low rainfall area excludes the land from grade 1.

6.0 SUBGRADE 3a

6.1 This occurs extensively on the site and typically includes areas of imperfectly drained (wetness class III) boulder clay soils. Typically soils comprise calcareous medium clay topsoils either directly overlying chalky boulder clay or having an upper subsoil of medium or heavy clay before the chalky boulder clay or clay with chalk is reached. These soils are more slowly permeable than those graded 2 and are consequently subject to slightly more severe wetness and workability constraints.

6.2 With careful management, land graded 3a is capable of producing good yields of a range of crops although the slightly greater wetness limitation will reduce the opportunities by land work, and may restrict the late harvesting of root crops.

7.0 NON AGRICULTURAL

7.1 Three categories of non agricultural land have been identified. An area of urban land has been identified in the middle of the site adjacent to the road, comprising houses and a small industrial development. The other areas comprise of a parcel of woodland in the south east corner of the site and the area occupied by the agricultural buildings and policies of Scotland Farm.

January 1990

MAFF

Resource Planning Group

Cambridge Regional Office

Sources of Reference

GEOLOGICAL SURVEY OF GREAT BRITAIN (1975). Drift Edition Geological Map Sheet No. 187 (Huntingdon) (1:50,000 scale)

MAFF, 1966. Agricultural Land Classification. Technical Report 11

MAFF, 1971. Agricultural Land Classification Map Sheet No. 135 (Provisional) (scale 1:63,360)

MAFF, 1976. Agricultural Land Classification. Technical Report 11/1

MAFF, 1984. The Agricultural Climate of England and Wales. Reference Book 435, MAFF, HMSO, London

METEOROLOGICAL OFFICE, 1988. Site specific rainfall data extracted from ALC agroclimatic dataset, compiled by the Meteorological Office

SOIL SURVEY OF ENGLAND AND WALES, 1983. Soils of Eastern England - Sheet No. 4 (1:250,000 scale)

1.0 INTRODUCTION

1.1 MAFF carried out an Agricultural Land Classification Survey in Spring 1988. This supplement to MAFF's main ALC proof gives details of land quality over an additional survey area located towards the north east corner of the original site. This additional survey area extends to 31.4 hectares and results in a revised total application area of 307.4 hectares. Survey work on the land concerned was carried out by MAFF in January 1990.

2.0 PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

2.1 The climatic characteristics of the Scotland Park Site are described in MAFF's main ALC proof for the site (paras 3.1-3.3).

Altitude and Relief

2.2 The additional survey area is located within the valley of the Callow Brook. The highest ground at 50 metres AOD occurs in the southwest and southeast corners of the site. From these points the land falls gently in an easterly and northwesterly direction respectively into the valley of Callow Brook. A minimum altitude of 30m AOD occurs where the Brook crosses the northern boundary of the site. Over the majority of the site gradients are gentle (2-3°), although, steeper gradients of up to 6° were recorded in small areas immediately flanking the Brook, towards the south of the site.

2.3 In common with the original site, Gault Clay forms the bedrock (solid geology) of the additional survey area. This is overlain on the higher ground by glacial boulder clay drift. On the lower valley sides the underlying Gault Clay is mapped as being exposed, although field survey observations indicate that this is in fact mainly obscured by the

shallow head deposits described in paragraph 3.8 of the MAFF main proof.

2.4 The distribution of soil types within the additional survey area is as described in the MAFF main proof (paragraphs 3.6 to 3.8).

2.5 The drainage status varies from Wetness Class II to Wetness Class III (moderately well to imperfectly drained).

3.0 AGRICULTURAL LAND CLASSIFICATION

3.1 The definition of Agricultural Land Classification grades are set out in Appendix 1 of MAFF's main ALC proof of evidence.

3.2 The table of agricultural land quality which follows is based on accurate planimeter measurements of the additional survey area. It supersedes the table presented at paragraph 4.2 of the MAFF main proof which relied on a more approximate figure of land-take within the additional survey area.

3.3 ALC	additional survey		revised total site	
	area		area	
	ha	%	ha	%
2	9.4	29.9	74.7	24.3
3a	22.0	70.1	224.5	73.0
Non agricultural	-	-	8.2	2.7
Total	31.4	100.0	307.4	100.0

Grade 2

3.4 Land of this quality is associated with the better drained soil variants on site and occurs in two main situations:

3.5 Firstly, and most extensively, in the valley of Callow Brook where soils are mainly derived from the lighter textured, moderately well

drained (wetness class II) head deposits and typically comprise clay loam or clay textures to depth.

- 3.6 Secondly, in small areas on the plateau where moderately well drained (wetness class II) calcareous clayey soils overlie chalky clay or chalky boulder clay at depth.
- 3.7 Land in these areas is principally limited by minor wetness and workability imperfections which derive from reduced subsoil permeability at depth in the soil profile combined with the relatively heavy nature of the topsoils. This together with the slight risk of droughtiness in this low rainfall area excludes the land from grade 1.

Subgrade 3a

- 3.8 This occurs extensively on the site and typically includes areas of imperfectly drained (wetness class III) boulder clay soils. Typically soils comprise calcareous medium clay topsoils either directly overlying chalky boulder clay or having an upper subsoil of medium or heavy clay before the chalky boulder clay or clay with chalk is reached. These soils are more slowly permeable than those graded 2 and are consequently subject to slightly more severe wetness and workability constraints.
- 3.9 With careful management, land graded 3a is capable of producing good yields of a range of crops although the slightly greater wetness limitation will reduce the opportunities for land work, and may restrict the late harvesting of root crops.

MAFF

Resource Planning Group

Cambridge Regional Office

February 1990