AGRICULTURAL LAND CLASSIFICATION

ROOKERY FARM, HINTON-IN-THE-HEDGES, N'HANTS.

1. INTRODUCTION

1.1 A semi-detailed Agricultural Land Classification (ALC) of this 148.4 hectare site was made during September 1989.

1.2 The Agricultural Land Classification provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. The limitations can operate in one or more of four principal ways: they may affect the range of crops which can be grown, the level of yield, the consistency of yield and the cost obtaining it. The classification system gives considerable weight to flexibility of cropping, whether actual or potential, but the ability of some land to produce consistently high yields of a somewhat narrower range of crops is also taken into account.

1.3 The principal physical factors influencing agricultural production are climate, site and soil. The main climatic factors which are taken into account are temperature and rainfall, although account is also taken of exposure, aspect and frost risk. The site factors used in the classification system are gradient, micro relief and flood risk. Soil characteristics of particular importance are texture, structure, depth and stoniness. In some situations chemical properties may also influence the long term potential of land and are taken into account.

1.4 These factors result in varying degrees of constraint on agricultural production. They can act either separately or in combination, the most important interactive limitations being soil wetness and droughtiness. The grade or subgrade of land

is determined by the most limiting factor present. Five grades of land are recognised ranging from Grade 1 land of excellent quality to Grade 5 land of very poor quality. Grade 3, which constitutes about half of the agricultural land in England and Wales is divided into two subgrades designated 3a and 3b.

1.5 Details of the Agricultural Land Classification (ALC) System are contained in MAFF's Revised guidelines and criteria for grading the quality of agricultural land. Descriptions of the ALC grades and subgrades are provided in Appendix 1.

2. BACKGROUND TO THE SITE

2.1 On the Ministry's published 1:63360 scale provisional ALC map (sheet No.146) (MAFF, 1968) the site is graded 3. For more detailed site-specific appraisals however, these maps are inappropriate as they were initially surveyed at a reconnaissance level, for strategic planning purposes, and often do not show smaller areas (ie. less than 80 hectares) of individual ALC grades.

2.2 The site comprises 22 enclosures and typical cropping includes cereals, linseed, grass and stubble turnips.

2.3 A total of 57 soil inspections were made over the site using a hand held 125cm Dutch soil auger. These inspections were supplemented by observations from 5 soil pits.

3. PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

3.1 Site specific climate data has been obtained by interpolating information contained in the 5km grid dataset produced by the Meteorological Office, (Met Office 1989).

3.2 This dataset indicates that for the site's mid-range altitude, (130m AOD) the annual average rainfall is 673mm (26.5"). This also indicates that field capacity days are 149. During this

time the workability of the finer textured land may be impaired because of the relatively slow permeability of these soils.

3.3 The accumulated temperature for this area is approximately 1351 degrees celsius. This parameter indicates the cumulative build up of warmth available for crop growth, and has an influence on the development of soil moisture deficits (SMD)* and susceptibility to drought; the soil moisture deficits for potatoes and wheat are 88mm and 98mm respectively.

3.4 The site is neither particularly exposed nor frost prone.

3.5 The climatic characteristics described in paragraphs 3.2 to 3.4 above do not impose any climatic limitation on the ALC grading of the survey site.

Altitude and Relief

3.6 The site comprises a pattern of gently and steeply undulating ** slopes which range in altitude from 110m AOD, adjacent to the brook, to 144m AOD, adjacent to the road along the western edge of the site. Altitude does not constitute a limitation to the ALC grade, however where slopes exceed 7^0, namely in isolated areas along the brook, the land is downgraded by gradient, because of a significant degree of limitation to the use of agricultural machinery.

* 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.

** Gently and steeply undulating: slopes were measured using a suunto clinometer and were found to range from 2-9.5^0.

Geology and Soils

3.7 A published geology map covering the site is not available. However the Soil Survey of England and Wales Bulletin No.13 (1984) indicates that the soils, west of Brackley, are typically derived from Permian, Jurassic and Eacere Limestone.

Their reconnaissance scale (1:250,000) map entitled "The Soils of Eastern England" shows the occurrence of the Aberford Association (*1) within the survey area.

4. AGRICULTURAL LAND CLASSIFICATION

4.1 A breakdown of the ALC grades in hectares and percentages is provided below.

TABLE 1: THE SURVEY SITE

	AGRICULTURAL LAND CLASSIFICATION	
Grade	ha	%
1	5.1	3.5
2	19.2	13
3a	44.6	30
3b	76.1	51
Non Agricultural	2.5	1.7
Farm Buildings	0.9	0.8
Total	148.4	100

TABLE 2. PROPOSED GOLF COURSE AREA

	AGRICULTURAL LAND CLASSIFICATION	
Grade	ha	%
2	8.5	15
3a	28.9	52
3b	17.5	31.6
Non Agricultural	0.6	1
Farm Buildings	0.2	0.4
TOTAL	55.7	100

(*1) Aberford Association = shallow, locally brashy, well drained calcareous fine loamy soils over limestone. Some deeper calcareous soils in colluvium.

4.2 Grade 1

A small area of land graded 1 has been mapped to the south of the old cricket ground. The soils typically comprise deep medium clay loam or sandy loams which merge into heavy clay loams or sandy loams at depth. These soil profiles have good moisture retention characteristics and profile porosity is relatively high (wetness Class I), consequently no significant droughtiness or wetness imperfections limit the ALC grade.

4.3 Grade 2

Land graded 2 occupies two tracts of land running northwest of Fox's spinney and southeast of Rookery Farm. This land is associated with freely draining soils (wetness Class I) which typically comprise calcareous heavy clay loam topsoils over clays which merge into weathered limestone at depth. Topsoil stone ranges from 3-7% and comprises medium limestone flags. These soils are slightly droughty; the combination of this and the heavy topsoil texture imposes a slight limitation on the agricultural potential of this land. As a result the land is graded 2 (very good quality land).

4.4 Subgrade 3a

Land graded 3a occurs in two main situations.

4.4.1 On the mid to upper slopes to the south and west of the brook and adjacent to Black Jack Spinney land has been graded 3a. This land is associated with moderately droughty soils which typically comprise calcareous, slightly stony heavy clay loam topsoils over clay subsoils which overlie weathered limestone at moderate depths. These profiles hold moderate reserves of water and are freely draining (wetness class I), consequently the overriding moderate droughtiness imperfection excludes this land from a higher grade.

4.4.2 Two small areas of land which lie along the northern boundary of the site and adjacent to Fox's Spinney have been mapped as rade 3a. This land lies in association with moderately

droughty coarse textured soils which typically comprise sandy loam topsoils over slightly stony loamy sands which may overlie sand at depth. Subsoil stone typically comprises medium and small ironstones. These soils hold moderate reserves of water and are freely draining (wetness Class I). As a result this moderate droughtiness limitation restricts the land to subgrade 3a.

4.5 Subgrade 3b

Land graded 3b occurs in two main situations.

4.5.1 Upslope, to the southwest, land has been graded 3b where the rubble limestone lies close to the surface. Soils typically comprise shallow, moderately stony clay loams over clay loams with rubble limestone (approximately 55% limestone by soil volume). The surface limestone flags act as a significant impediment to cultivation, harvesting and crop growth and many reduce the nutrient capacity of the soil. As a result, this topsoil stone limitation restricts the land to subgrade 3b.

4.5.2a

On the mid to lower slopes and upslope, to the south of Field Barn, finer textured soils have been graded 3b. These soils typically comprise clay loam or clay topsoils over gleyed clays which may overlie weathered limestone or, in the vicinity of the brook, organic material at depth. The subsoils are slowly permeable (wetness Class III or IV) and the topsoil textures are heavy (eg heavy clay loams), these factors combine to impose a significant limitation on the agricultural potential of this land. Thus the land is restricted to subgrade 3b (moderate quality agricultural land).

4.5.2b

On parts of the land described above in paragraph 4.5.2a (namely on the lower slopes to the north and south of the brook) poor drainage and gradient limitations exclude this land from a higher grade.

4.6 Non Agricultural

Scrub and Woodland areas have been mapped as non-agricultural.

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Appendix 1

Grade 1 - excellent quality agricultural land

Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

Grade 2 - very good quality agricultural land

Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.

Grade 3 - good to moderate quality agricultural land

Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. When more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.

Subgrade 3a - good quality agricultural land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.

Subgrade 3b - moderate quality agricultural land

Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.

Grade 4 - poor quality agricultural land

Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (eg cereals and forage crops) the yield of which are variable. In most climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable crop.

Grade 5 - very poor quality agricultural land

Land with very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

References

MAFF, 1968. Agricultural Land Classification Map Number 146. Scale 1:63360.

MAFF, 1988. Agricultural Land Classification of England and Wales. (Revised Guidelines and criteria for grading the quality of Agricultural Land). Alnwick.

METEOROLOGICAL OFFICE 1989. Climatic data extracted from the Agricultural climatic dataset.

SOIL SURVEY OF ENGLAND AND WALES, 1983. 'The Soils of Eastern England' Sheet 4 1:250,000 scale.

SOIL SURVEY OF ENGLAND AND WALES, 1984. 'Soils and their use in Eastern England 'Bulletin No.13. Harpenden.