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AGRICULTURAL LAND CLASSIFICATION

FORTUNE'S FARM, WATFORD, HERTFORDSHIRE

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1. BACKGROUND

1.1 The site an area of 52.4 hectares, is the subject of an application for a golf course. In May 1993, ADAS Resource Planning Team undertook an Agricultural Land Classification (ALC) survey to assess the agricultural land quality, carrying out a total of 46 auger borings using a hand held Dutch soil auger. In addition three soil inspection pits were dug to assess subsoil conditions and throughout the site riddle samples were taken to assess topsoil stone content.

1.2 At the time of the survey the majority of the site was under grass, either for silage or cattle grazing with some new grass leys being established. The remaining fields have recently been sown with maize. Bloom Wood occupies an area near the middle of the site.

1.3 On the published provisional ALC map, sheet 160 (MAFF, 1970) the survey area is shown as grade 3 with Bloom Wood mapped as land primarily in non agricultural use.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

2.1 Climate data was obtained by interpolating information contained in the published agricultural climatic dataset (Met Office, 1989). This indicates that for an average site altitude of 90m AOD, the annual average rainfall is 693mm (27.3"). This also indicates that the field capacity days are 147 and the moisture deficits for potatoes and wheat are 97mm and 105mm respectively. These climatic characteristics do not impose any climatic limitation on the ALC grade of the site.

Altitude and Relief

2.2 The site area surveyed rises in altitude from 75m AOD at Waterdell Farm in the north east to 101m near Home Farm in the southwest. Much of the site is only gently sloping (1-2°) with steeper slopes (measured at 4-6°) only occurring along the southern side of Chequers Lane. Neither gradient nor altitude constitute limitations to the ALC grade.

Geology & Soils

2.3 The published 1:63,360 scale drift edition Geology Maps 238 and 239 (Geological Survey 1949 and 1948) show the area to comprise mainly glacial gravel (with Bunter Pebbles) with an outcrop of the underlying Cretaceous Upper Chalk running along Chequers Lane and to the eastern end of Bloom Wood.

2.4 No detailed soil map is available for the whole of the area but Sheet 238, Aylesbury (Soil Survey of England and Wales, 1961) covers the south western corner of the site. This part of the site comprises the Berkhampstead Complex(*1). On the reconnaissance 1:250,000 scale soil map "Soils of Eastern England" (Soil Survey of England and Wales, 1983) the whole site is mapped as the Marlow Association(*2). During the current more detailed survey work two soil types were identified.

2.5 The first soil type is found between Fortunes Farm and Bloom Wood and covers approximately one quarter of the site. These light textured soils typically comprise moderately stony medium sandy loam or occasionally sandy silt loam topsoils to a depth of 25/40 cms overlying moderately stony loamy medium sand (occasionally medium sandy loam or sandy clay loam) upper subsoils.

2.6 Lower subsoils are usually moderately or occasionally slightly stony and comprise loamy medium sand or medium sand textures which may contain clay lenses. Topsoils stone content within this area was measured at 15-25% soil volume with between 10-15% of stones exceeding 2cm.

2.7 The remainder of the site is comprised of generally better bodied soils. These profiles are non-calcareous and typically comprise medium clay loam, occasionally medium silty clay loam or heavy clay loam topsoils to 25/30cms overlying heavy clay loam or heavy silty clay loam upper subsoils. Lower subsoils comprise heavy clay loam, heavy silty clay loam or clay.

(*1) **Berkhampstead** - pebbly loams or sandy loams which pass into stiff clay.

(*2) **Marlow** - well drained fine loamy over clayey and clayey soils. Some coarse and fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging.

2.8 Total topsoil stone content within this soil type ranges from slightly to moderately stony (typically 6 to 30% flints). Subsoil stoniness is more variable ranging from very slightly stony (5% soil volume in some areas) to very stony (70% of soil volume) elsewhere.

2.9 In general these soils are moderately well drained (wetness class II) although profiles with better (wetness class I) and poorer (wetness class III and IV) soil drainage characteristics do occur locally.

3.0 AGRICULTURAL LAND CLASSIFICATION

3.1 The definitions of the ALC grades is provided in Appendix 1.

3.2 The site is graded predominantly subgrades 3a and 3b with a small area of grade 2 occurring to the south of Fortunes Farm. A precise breakdown of the ALC grades in hectares and percentage terms is given below.

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Grade	Hectares	%
2	4.3	8
Subgrade 3a	18.7	36
Subgrade 3b	16.9	32
Non agricultural	10.3	20
Urban	2.2	4
TOTAL	52.4	100

Grade 2

3.3 Land graded 2 is associated with the less stony well or moderately well drained fine loamy soils described in paragraphs 2.7 to 2.9. Topsoil stones in excess of 2cm were measured to be in the range of 6-7% soil volume. The land is therefore limited by minor winter wetness and/or topsoil stoniness imperfections.

Subgrade 3a

3.4 The majority of the land graded 3a is associated with the stonier variants of soils described in paragraphs 2.7 to 2.9. These soils have slightly to moderately stony topsoils with typically 11-12% stones greater than 2cm in size. The presence of stones affects crop drilling and establishment, the availability of soil water and nutrients, and wear and tear on farm machinery. Thus this land is limited by topsoil stoniness and/or droughtiness constraints.

3.5 In some areas where clay occurs at depth profiles are imperfectly drained (wetness class III). This factor in combination with the non calcareous medium clay loam topsoil restricts land quality to subgrade 3a.

Subgrade 3b

Land graded 3b occurs in 3 situations:

3.6 Most of the land graded 3b is associated with the light textured stony soils described in paragraphs 2.5 and 2.6. The sandy textures and high profile stone content result in a reduced water holding capacity and the land is therefore limited by droughtiness imperfections.

3.7 Secondly, land graded 3b is also mapped where topsoil stone volumes in excess of 2cm exceed 15%. These areas occur to the south east of Woodside Road and sporadically in other locations where stones in excess of 2cm ranged from 16-25% of soil volume.

3.8 Thirdly, land graded 3b occurs in a small area close to Waterdell Farm where poorly drained (wetness class III/IV) clayey soils are restricted by moderate wetness and workability imperfections.

Non agricultural

3.9 Woodland, small copses and playing fields north of the crematorium are classified as land primarily not in agricultural use.

Urban

3.10 Houses and associated gardens, Fortunes Farm with associated buildings and storage areas are classified as urban.

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REFERENCES

GEOLOGICAL SURVEY OF ENGLAND AND WALES, 1949. Drift Edition, Sheet 238, 1:63,360 scale.

GEOLOGICAL SURVEY OF ENGLAND AND WALES, 1948. Drift Edition, Sheet 239, 1:63,360 scale.

MAFF 1970. Agricultural Land Classification Map No. 160. Provisional. 1:63,360 scale.

MAFF 1988. Agricultural Land Classification of England and Wales (Revised Guidelines and Criteria for Grading the Quality of Agricultural Land). Alnwick.

METEOROLOGICAL OFFICE 1989. Published climatic data extracted from the agroclimatic dataset compiled by the Meteorological Office.

SOIL SURVEY OF ENGLAND AND WALES 1961. Sheet 238, Aylesbury, 1:63,360 scale.

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 include 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 crops. The level of yields 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. Where 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 winter 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 levels 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 land.

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.