Cambs 18/90

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AGRICULTURAL LAND CLASSIFICATION

SOUTH OF HEMEL HEMPSTEAD ROAD, POTTERS CROUCH

1.0 BACKGROUND

1.1 Land at this 68.4 ha site was surveyed in March 1990 in connection with proposals to develop the area as a golf course with supporting amenities.

1.2 On the published 1:63 360 scale Agricultural Land Classification map (Sheet 160; MAFF 1970) the land is shown as grade 3, together with an area of non-agricultural land. These maps are inappropriate for site-specific proposals however, as they were surveyed at reconnaissance level only and do not always show small areas of individual grades (ie less than approximately 80 ha). The current survey was undertaken to provide more detailed agricultural land classification (ALC) information for the area.

1.3 A total of 42 soil inspections were made over the site using a hand held 120 cm Dutch soil auger, and data obtained were supplemented by information from a soil profile pit.

2.0 PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

2.1 Site specific climate data have been obtained by interpolating information contained in the 5 km grid dataset produced by the Meteorological Office (Met Office; 1989). This indicates that for the site's median altitude of 115 m, the average annual rainfall is 698 mm (27.5"). Soils are likely to be at field capacity for approximately 147 days and soil moisture deficits are estimated as 103 mm for wheat and 93 mm for potatoes.

2.2 The site is neither particularly exposed nor frost prone.

2.3 These climatic characteristics place no limitation on the ALC grading of this site.

Altitude and Relief

2.4 The site occupies gently sloping land between altitudes of 100 m and 130 m AOD, with overall falls to the south. The southern part of the site is dissected by a shallow valley running in a southerly direction. Gradients of between 4° and 8° were recorded on the valley sides but were only found to exceed 7° on the eastern flank of the valley. Land along this eastern valley flank is therefore limited by gradient and can be graded no higher than 3b. Elsewhere, gradient and relief place no limitation on ALC grade.

Geology and Soils

2.5 The Geological survey of England and Wales have mapped the drift geology of the area at Potters Crouch at a scale of 1:63,360 (map 238; 1923). This shows the presence of Pleistocene and Recent Pebbly Clay and Sand north of Potters Crouch Plantation with Upper Chalk (Cretaceous) in the central strip of the southern part of the site, Glacial Gravels and Bunter Pebbles (Recent and Pleistocene) occur east and west of this.

2.6 The Soil Survey of England and Wales have mapped the soils of this area on two occasions, firstly at a scale of 1:63 360 (Sheet 238:1961), and more recently at a reconnaissance scale of 1:250,000 (1983). This more recent map shows the Hornbeam 2 Association (*1) to occur north of Potters Crouch Plantation with the Marlow Association (*2) mapped elsewhere. A more detailed inspection of soils was carried out during the current survey, and one soil type was identified.

(*1) Hornbean 2 Association: Deep fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging. Some well-drained fine loamy and fine silty over clayey, and clayey soils. Some soils very flinty.

(*2) Marlow Association: 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.

2.6.1 The majority of soils typically comprise slightly to moderately stony (* 3) medium clay loam topsoils overlying slightly to moderately stony upper subsoils of medium clay loam and occasionally sandy clay loam. Below 50-70 cms, lower subsoils of slightly moderately stony clay, and occasionally sandy clay. At frequent locations, subsoils were impenetrable to the hand auger below 50-70 cms. Profile pit observations indicate that moderately stony clay and sandy clay subsoils occur at this depth and extend to 120 cms+. In a narrow strip adjacent to Potters Crouch Plantation in the south-west of the site, and at scattered locations elsewhere, moderately stony medium clay loam topsoils directly overlie slightly to moderately stony clay (and occasionally sandy clay) upper subsoils which extend to depth. Occasionally clay loam and sandy clay loam textures extend to depth and at 2 or 3 locations, medium clay loam, sandy clay loam and sandy loam upper subsoils overlie loamy sand and sand. All *profiles are freely draining and are assessed as Wetness Class I.*

3.0 AGRICULTURAL LAND CLASSIFICATION

3.1 The site has been graded using the Revised guidelines and criteria for grading the quality of agricultural land, (MAFF 1988). Definitions of the ALC grades are set out in Appendix 1.

3.2 The table below shows a breakdown of ALC grades in ha and % terms for the land south of Hemel Hempstead Road, at Potters Crouch.

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Grade	ha	%
3a	7.5	11.0
3b	51.5	75.3
Non-agricultural	9.4	13.7
TOTAL	68.4	100.0

(*3) Comprising mainly medium sub-angular flints and rounded pebbles.

4. SUBGRADE 3a

Land graded 3a occurs in 2 locations. Firstly in a hollow in the landscape in the northern part of the site and secondly extending along the floor and western flank of the valley feature in the southern part of the site. Land of this quality is associated with less stony variants of soils described in paragraph 2.6.1 where topsoil stone varies from 5-15% by volume but is generally greater than 10%. The main effects of stones in the topsoil are to act as an impediment to cultivation, harvesting and crop growth. A high stone content can increase production costs by causing extra wear and tear to implements and tyres. Crop quality may also be reduced in stony soils by causing, for example, the distortion of root crops or bruising of root crops during harvesting. Stones can impair crop establishment by causing reduced plant populations in precision drilled crops, and they reduce the nutrient capacity of the soil. The constraints caused by stones limit the land in the two locations described to subgrade 3a. Although small areas with less than 6% stones are recorded, they are too inextensive to delineate separately at the scale shown.

5. SUBGRADE 3b

Topsoil stone volumes of 16%-25% are recorded over the remainder of the site imposing a greater degree of limitation. In addition to this, gradients of over 7° are recorded on the eastern flank of the valley feature. High topsoil stone volumes and relatively steep gradients restrict the majority of the site to subgrade 3b.

6. NON-AGRICULTURAL

Parts of Potters Crouch Plantation and a deep wooded hollow are mapped as non-agricultural.

April 1990

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References

MAFF (1970) : Agricultural Land Classification Map No. 160; Scale 1:63,360

METEOROLOGICAL OFFICE (1989) : Climatological Data for Agricultural Land Classification

GEOLOGICAL SURVEY OF ENGLAND AND WALES (1923) : Drift Edition Geology map "Aylesbury" Sheet 238; scale 1:63,360.

SOIL SURVEY OF ENGLAND AND WALES (1961) : "Aylesbury" sheet 238; scale 1:63,360

SOIL SURVEY OF ENGLAND AND WALES (1983) : "Soils in Eastern England"; Scale 1:250,000.

MAFF (1988) : Agricultural Land Classification of England and Wales : Revised guidelines and criteria for grading the quality of agricultural land.