AGRICULTURAL LAND CLASSIFICATION

LAND AT SOUTHERN END OF RADIO STATION B, WATLING STREET, CRICK, NORTHAMPTONSHIRE

1.0 INTRODUCTION

1.1 An Agricultural Land Classification (ALC) survey was undertaken on behalf of MAFF in November 1995 of a site at the southern end of Radio Station B, Watling Street, Crick, Northamptonshire.

1.2 The site, which extends to 15.2 ha, lies immediately on the eastern side of the A5 road (Watling Street) to the south of the British Telecommunications Radio Station and is bounded on three sides by open agricultural land albeit that on land to the north, there are a number of radio masts.

1.3 A total of 16 auger borings was made over the entire site using a dutch auger to a depth of 1.2 m unless prevented by impenetrable material. In addition, 2 soil pits were dug to help assess subsoil conditions in greater detail.

1.4 At the time of survey the majority of the site was in permanent grass, with the exception of the middle field which was in winter cereals, although previously it also had been in permanent grass.

1.5 On the published 1:63,360 scale provisional ALC map (MAFF, 1972) the site has been mapped as Grade 4. However, this map is of a reconnaissance nature and the current survey was undertaken to provide site specific information. Land on the other side of the A5 road was the subject of a previous ADAS study (ADAS, 1993) which showed the area immediately adjacent to the present site to be Subgrade 3b.

2.0 PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

2.1 Climatic criteria are considered when classifying land as these may have an overriding limitation in terms of the agricultural use. The main parameters used in the assessment of the overall climatic limitation are average annual rainfall, as a measure of overall wetness, and accumulated temperature (day °C Jan-June) as a measure of the relative warmth of an area.

2.2 A detailed assessment of the prevailing climate for the site has been made by interpolation from the 5 km grid dataset produced by the Meteorological Office (Met Office 1989). The details are given in Table 1 and show that there is no overall climatic limitation affecting this site.

Table 1: Climatic Interpolation

Grid Reference	SP568 739
Altitude (m)	105
Accumulated Temperature (Day °C, Jan-June)	1363
Average Annual Rainfall (mm)	700
Moisture Deficit, Wheat (mm)	98
Moisture Deficit, Potatoes (mm)	87
Field Capacity (Days)	157
Overall Climatic Grade	1

2.3 Climatic factors do however interact with soil properties to influence soil wetness and droughtiness.

Altitude and Relief

2.4 The majority of the site is relatively flat, rising slightly toward the east. Slopes range from 0-2° and the altitude ranges from approximately 106 m AOD on the eastern boundary to 101 m AOD alongside the A5. Altitude and relief, therefore, do not impose any limitation to the agricultural quality of the site.

Geology and Soils

2.5 The published 1:50,000 scale geology map (Geol. Survey, 1980) indicates that the western half of the site is Recent and Pleistocene Alluvium, whilst the east is underlain by Jurassic Lias Clays.

2.6 There is no detailed published soil map of this district. The reconnaissance soil survey map for the area (Soil Survey, 1983) however, shows the presence of two soil associations, namely Fladbury 1* and Denchworth**. The former is mapped on the lower lying land adjacent to the A5, with the latter occupying land to the east.

2.7 The current survey indicates that there are two soil types on the site, with the majority of the area comprising deep, stoneless, fine loamy over clayey soils. On the lower lying land at the south west corner of the site, the soils are broadly similar although the upper subsoil is moderately stony overlying the stoneless clay.

2.8 A typical profile over the majority of the site has a dark brown heavy clay loam topsoil, although on the slightly higher land to the east of the site the topsoil texture is invariably clay, overlying a yellowish brown slightly mottled clay upper subsoil. The lower subsoil is typically a light olive brown clay with many ochreous and grey mottles, becoming greyer and less prominently mottled with depth. The soils are generally stoneless throughout and the upper subsoil structure is coarse subangular blocky, with the lower subsoil becoming coarse prismatic breaking to coarse angular blocky. The soils generally become slowly permeable below 40-60 cm depth and have therefore been assessed as Wetness Class III, or occasionally IV.

(*) Fladbury 1 association: Stoneless clayey soils, locally calcareous, occurring on flat land and variably affected by groundwater.

(**) Denchworth association: Deep, slowly permeable seasonally waterlogged clays and fine loamy over clayey soils, locally calcareous, developed from Jurassic and Cretaceous clay.

2.9 On the flat land at the south west corner of the site, the soils typically have a mottled heavy clay loam topsoil over a greyish brown, strongly mottled clay upper subsoil with few small angular flint fragments. Stone content generally increases markedly with depth, with abundant manganese staining and the texture is typically a sandy clay, before the deeper stoneless grey clay is encountered below approximately 80 cm depth. The marked gleying throughout the profile indicates that these soils are waterlogged for long periods of the year and have therefore been assessed as Wetness Class IV.

3.0 AGRICULTURAL LAND CLASSIFICATION

3.1 The land has been classified using the guidelines contained in the Agricultural Land Classification of England and Wales (MAFF, 1988). A definition of each grade is given in an Appendix at the end of the report.

3.2 At this site the factors which primarily determine grading are the soil wetness class (itself a function of climate and soil permeability) and topsoil texture. The whole site is classified as Subgrade 3b.

Subgrade 3b

3.3 The site has been classified as Subgrade 3b due to the presence of heavy textured soils with impeded drainage. All the soils have been assessed as either Wetness Class III or IV and under the prevailing climatic conditions, the presence of heavy clay loam or clay topsoil textures will result in a moderately severe workability limitation. The land will tend to lie wet for prolonged periods during the year and hence soil management will need to be carefully controlled to avoid structural damage to the soils.

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Resource Planning Team
ADAS Cambridge

REFERENCES

ADAS EASTERN STATUTORY CENTRE, 1993. Agricultural Land Classification, Land at Crick, Northamptonshire. RPT Cambridge, File 131/93.

GEOLOGICAL SURVEY OF GREAT BRITAIN, 1980. Sheet 185 , Northampton, 1:50,000 scale, Solid and Drift Edition.

MAFF, 1972. Agricultural Land Classification Map. Provisional. Scale 1:63,360 Sheet 132.

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

METEOROLOGICAL OFFICE, 1989. Climatological Data for Agricultural Land Classification.

SOIL SURVEY OF ENGLAND AND WALES, 1983. Sheet 3, "Soils of Eastern England". 1:250,000 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 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. 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 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 levels of yields. It is mainly suited to grass with occasional arable crops (e.g. 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.