Cambs 131/93

AGRICULTURAL LAND CLASSIFICATION
LAND AT CRICK, NORTHAMPTONSHIRE

1.0 INTRODUCTION

1.1 This 77.1 hectare site is the subject of proposals for the Daventry International Rail Freight Terminal. In November 1993, ADAS Resource Planning Team undertook and Agricultural Land Classification (ALC) survey of the site using a hand held dutch auger at a density of approximately 1 auger boring per 1.5 hectares. In addition three soil inspection pits were dug to assess subsoil conditions.

1.2 At the time of the survey all the land to the north of the A428 was or had been in cereal production, whilst the whole area to the south was under grass with sheep and cattle grazing.

1.3 On the published ALC sheet 132 (MAFF 1972) most of the site is mapped as grade 3. A small old disused pit in the south east corner of the site is mapped as non agricultural.

2.0 PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

2.1 Climate data was obtained from the published agricultural climatic dataset (Met Office 1989). This indicates that for the survey area's average altitude of 115 m AOD, the average annual rainfall is 695 mm (27.4"). This data also indicates that the field capacity days are 156 and moisture deficits for wheat and potatoes are 96 mm and 85 mm respectively. These climatic characteristics do not impose any climatic limitation on the site.

Altitude and Relief

2.2 The land to the north of the A428 is relatively flat with an average altitude of 105 m AOD. To the south, the site is gently undulating with a small tributary of the River Avon running in a northerly direction creating a valley feature on the eastern part of the site. The land rises gently in a southerly direction to a maximum altitude of approximately 130 m AOD along the railway cutting.

2.2.1 Two areas in the south east of the site are limited by gradient and topography. The first is an old disused pit which has not been restored and has slopes of approximately 20° (measured with a hand held clinometer). The second area comprises old soil storage mounds to the southeast of the old pit with gradients measured up to 25°.

2.2.2 Both these areas are incapable of being used for anything else other than their current use - rough grazing and are thus limited to grade 4 on gradient and micro relief.

2.2.3 Apart from these two areas neither gradient nor altitude constitute limitations to the ALC grade.

Geology and Soils

2.3 The published 1:50,000 scale solid and drift edition geology sheet 185 (Geological Survey of England and Wales, 1980) shows the lowest land to the north of the A428 to be covered by alluvium. This overlies Jurassic Middle Lias Silts and Clays which outcrop along the midslopes of the site. On the highest land this deposit is in turn overlain by glacial boulder clay, sand and gravel.

2.4 No detailed soil map is available of the area but the reconnaissance 1:250,000 scale soil map "Soils of Midland and Western England" published by the Soil Survey of England and Wales 1983 shows the presence of four soil associations which broadly correlate with the underlying geology.

2.4.1 In the northern most part of the site Fladbury 1 Association (*1) soils are mapped, whilst on the midslopes Denchworth Association soils (*2) are shown. On the highest land to the south Beccles 3 Association (*3) are shown with a small area of Wick 1 Association (*4) in the extreme south west corner of the site.

(*1) Fladbury 1 Association: Stoneless clayey soils, in places calcareous, variably affected by groundwater, flat land, risk of flooding.

(*2) Denchworth Association: Slowly permeable seasonally waterlogged clayey soils with similar fine loamy over clayey soils. Some fine loamy over clayey soils. Some fine loamy over clayey soils with only slight seasonal waterlogging and some slowly permeable calcareous clayey soils. Landslips and associated irregular terrain locally.

(*3) Beccles 3 Association: Slowly permeable seasonally waterlogged fine loamy over clayey soils and similar soils with only slight seasonal waterlogging. Some calcareous clayey soils especially on steeper slopes.

(*4) Wick 1 Association: Deep well drained coarse loamy and sandy soils, locally over gravel. Some similar soils affected by groundwater. Slight risk of water erosion.

2.5 During the ADAS field survey three soil types were identified.

2.5.1 Over much of the lower and midslopes of the site profiles typically comprise non calcareous, very slightly stony heavy clay loam or clay (occasionally medium clay loam) topsoils over similar or heavier subsoils. Soils are poorly drained, being slowly permeable from 25-50 cms (assessed as wetness class III/IV).

2.5.2 To the southeast of the disused pit (between the pit and old soil heaps) is a small area of soils similar to those described above but heaving slightly better drainage characteristics. Topsoils typically comprise non calcareous very slightly stony heavy clay loam. The underlying heavy clay loam or clay subsoils are slowly permeable at depth, typically 60/70 cms and are assessed at wetness class II.

2.5.3 The lightest soil type is found on the highest land to the southeast of the Lodge. Profiles typically comprise very slightly stony to slightly stony medium sandy ~~clay~~ loam or sandy clay loam over similar upper subsoils. Lower subsoils are variable, both in stoniness and texture. Stoniness ranges from very slightly stony to moderately stony whilst textures range from medium sand through to sandy clay loam. Profiles with the lightest subsoils are freely draining (wetness class I) whilst profiles with heavier textured subsoils are moderately drained (wetness class II).

3.0 AGRICULTURAL LAND CLASSIFICATION

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

3.2 The site has been mapped predominantly subgrade 3b with smaller areas of grades 2, 3a and 4 in the southern part of the area. The table below shows the breakdown of the grades in hectares and % terms for the survey area.

AGRICULTURAL LAND CLASSIFICATION

Grade	ha	%
2	7.4	10
3a	3.2	4
3b	59.3	77
4	4.9	6
Urban	1.8	2
Agr. buildings	0.5	1
TOTAL	77.1	100

Grade 2

3.3 Land graded 2 is associated with the light sandy soils described in paragraph 2.5.3.

3.3.1 The lightest varient of these soils is freely draining (wetness class I) and holds moderately good reserves of available water for crop growth. The combination of light textures and profile stone content result in a slight droughtiness limitation excluding the land from grade 1.

3.3.2 The heavier textured variant typically comprises deep sandy clay loam profiles which are slowly permeable at depth (wetness class II). The land is limited by a combination of minor winter wetness and workability constraints.

3.3.3 Within the area graded 2 topsoils stone content is sporadically an additional limitation with topsoil stone content measured at a maximum of 9% ≥ 2 cms.

Subgrade 3a

3.4 The land graded 3a occurs in a small area to the southeast of the disused pit and is associated with soils described in paragraph 2.5.2. The fine loamy topsoils overlay similar or clayey subsoils which are moderately well drained (wetness class II). The combination of heavy textured topsoils and moderate drainage characteristics combine to limit the land with a moderate wetness and workability limitation.

Subgrade 3b

3.5 The land graded 3b is associated with the heavy textured soils found on the mid and lower slopes of the site as described in paragraph 2.5.1. Profiles are poorly drained and slowly permeable at a shallow depth (wetness class III/IV). This factor combined with the heavy textured topsoils results in a moderately severe wetness and workability restriction limiting the land to subgrade 3b.

Grade 4

3.6 Land graded 4 occurs in the two disturbed areas of the site as described in paragraphs 2.2.1 and 2.2.2. Slopes in excess of 15° were measured thus limiting these areas on gradient.

Urban

3.7 The Lodge and the A428 are mapped as urban.

Agricultural Buildings

3.8 Buildings associated with the Lodge are mapped as agricultural buildings.

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REFERENCES

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

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