Combs 76/92

AGRICULTURAL LAND CLASSIFICATION

WELLINGBOROUGH NORTHAMPTONSHIRE

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1. BACKGROUND

1.1 The site, an area of 175.1 hectares, is the subject of an application for industrial development east of Wellingborough, Northamptonshire. The agricultural land was surveyed in detail in September/October 1992, by the ADAS Statutory Unit, in order to assess the agricultural land quality. A significant area (37.6 ha) at the eastern edge of the site was left unsurveyed because the land is of archaeological value and under the proposed development it will become an archaeological park.

1.2 At the time of survey the land mainly comprised ploughed areas, however crops of beans, cereals and oilseed rape are typically grown. Areas of grassland are common, especially in the Nene Floodplain and upslope in association with restored ironstone worked land.

1.3 On the published Agricultural Land Classification (ALC) map sheet 133 (Provisional, scale 1:63360, MAFF 1974) the site is shown as mainly grade 3, with smaller areas of grade 2, 4 and Non Agricultural/Urban. Since this map is of a reconnaissance nature designed primarily for strategic planning purposes, the current survey was undertaken to provide more detailed information on land quality for the survey area.

1.4 Earlier in the year a detailed survey was carried out on 23.8 hectares of land adjacent to the river. This identified that the land adjacent to the river was grade 3b due to flooding and poor drainage constraints, and that upslope better quality grade 2 land outcrops.

1.5 A desk study (1992) covering part of the site indicated the likelihood of land of low quality (subgrade 3b) predominating in the Nene floodplain area. The current field survey confirmed this.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

2.1 Climate data for the site was obtained from a recently published agricultural climatic dataset (Met Office 1989). This indicated that for the site's mid altitude of 50 AOD the annual average rainfall is 589 mm (23.2"). This data also indicates that field capacity days are 120 and moisture deficits are 116 mm for wheat and 110 mm for potatoes. These climatic characteristics do not impose a limitation on ALC grade.

Altitude and Relief

2.2 The land falls gently, and in a few areas steeply, towards the river Nene. Slopes in excess of 7° outcrop sporadically to the south of the HM Young Offenders Institution. In these steeper areas slopes range from 8.5 to 10°, consequently significant gradient limitations restrict the land to subgrade 3b. The site altitude ranges from 40 m AOD (adjacent to the river) to 77 m AOD near Millers Lane.

Geology and Soils

2.3 The published 1:63,360 scale solid and drift edition geology map 152 (Geological Survey of Great Britain 1967) shows the area to comprise a complex pattern of geology which relates to the altitude variation. North of the A45 the area comprises bands of alluvium, Upper Lias Clay and Northampton Sand with Ironstone (with narrower bands of Lower Estuarine Clay, Upper Estuarine Limestone and Clay and Oolite Limestone deposits) with increase in altitude southwards. Adjacent to the HM Young Offenders Institution the geology mapped with rise in altitude westwards comprises alluvium, boulder clay and Upper Lias Clay with narrower deposits of first and second terrace river gravels, Lower Estuarine Clay and Northampton Sand with Ironstones. The current field survey broadly confirms the presence of soils derived from the main geological deposits.

2.4 The Soil Survey of England and Wales have mapped the soils in the Wellingborough area at a reconnaissance scale of 1:250,000 (Soil Survey

1983). The map, the Soils of Eastern England, shows the occurrence of mainly the Moreton (*1) and Fladbury 1 (*2) Associations, with a smaller area of the Banbury Association (*3) adjacent to the Chester Road. The current detailed survey indicates the presence of 5 main soil types.

2.4.1 On the river Nene valley floor and lower slopes clayey soils predominate. Typically these soils consist of heavy clay loam or clay topsoils over clay subsoils. Profiles are typically non calcareous throughout.

2.4.2 On the mid slopes of the Nene Valley lighter textured profiles predominate. These soils typically comprise medium or sandy clay loam topsoils over medium or sandy clay loam subsoils. Profiles are porous and typically non-calcareous throughout.

2.4.3 On the upper slopes in the vicinity of HM Young Offenders Institution and the A45 road soils typically consist of deep heavy clay loams (occasionally medium clay loam topsoils) to a depth of 50/60 cms over clay lower subsoils. Occasionally to the south of the A45 the profiles associated with the boulder clay deposits are calcareous throughout. To the north of the A45 topsoils and upper subsoils contain very small proportions of ironstone fragments (ie <5%).

2.4.4 A small area of Limestone derived soils outcrops adjacent to the Chester Road. These soils typically comprise heavy clay loam topsoils and upper subsoils over weathered Limestone rock at variable depth (45/90 cm). Profiles are calcareous throughout and topsoils are slightly or moderately stony.

(*1) Moreton Association: Well drained calcareous clayey and fine loamy soils over Limestone, in places shallow and brashy. Some deeper slowly permeable calcareous clayey soils.

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

(*3) Banbury Association: Well drained brashy fine and coarse loamy ferriguous soils over ironstone. Some deep fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging.

2.4.5 Finally a small area of ironstone derived soils have been identified adjacent to the Irchester Country Park. Profiles typically comprise moderately stony heavy clay loams which overlie brashy ironstone deposits 40/45 cms+. This soil type is associated with an area of restored ironstone workings.

3. AGRICULTURAL LAND CLASSIFICATION

3.1 The definition of the ALC grades (MAFF, 1988) are included in Appendix 1.

3.2 The majority of the site has been graded 3b, while smaller areas of 2 and 3a outcrop at higher elevatations. The table below shows the precise breakdown of the ALC grades in hectares and percentage terms for the site

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Grade	ha	%
2	9.6	6
3a	42.1	24
3b	74.0	42
Urban	5.6	3
Non-Agricultural	6.2	4
Unsurveyed	37.6	21
TOTAL	175.1	100

Grade 2

3.3 The grade 2 land is associated with the soils described in paragraph 2.4.2. These soils show no evidence of drainage impedance and have been assigned a wetness class of I. The fine loamy textures and the presence of very small quantities of profile stone combine to impose a slight droughtiness limitation. Thus the land is excluded from a higher grade.

Subgrade 3a

3.4 The land graded 3a is associated with two soil types.

3.4.1 The land graded 3a, adjacent to the Chester Road, is associated with the less droughty variants of the Limestone derived soils described in paragraph 2.4.4. The presence of Limestone and moderate depth to Limestone rock act together to limit the availble water for crop growth. In addition, topsoil stone content of fragments greater than 2 cms in size often imposes a moderate cultivation limitation on the land. As a result moderate droughtiness and/or topsoil stone content limits the land to subgrade 3a (good quality agricultural land).

3.4.2 The heavier textured soils described in paragraph 2.4.3 are relatively heavy in the upper horizons and show evidence of drainage impedance in the subsoil, typically from 50/60 cms. Consequently the wetness class has been assessed as II. The land is restricted to subgrade 3a due to the over-riding moderate wetness and workability limitations.

Subgrade 3b

3.5 The land graded 3b is associated with the three soil types described in paragraphs 2.4.1; 2.4.4 and 2.4.5.

3.5.1 The majority of the land graded 3b is associated with the clayey soils described in paragraph 2.4.1. Profiles are poorly drained, being slowly permeable, directly below the topsoil, consequently the wetness class has been assessed as III. The heavy textures and poor drainage combine to restrict the land to subgrade 3b (moderate quality agricultural land).

3.5.2 The second area graded 3b (NE of Irchester Country Park) consists of 2 soil types, firstly the shallow variant of the Limestone derived soils described in paragraph 2.4.4 and secondly the ironstone derived soils described in paragraph 2.4.5. Land comprising these soil types suffer from a topsoil stone and droughtiness limitation. Topsoil stone content, typically 15-20% greater than 2 cm in size imposes a significant impediment to cultivation. In addition the presence of profile stone and the relatively shallow depth to the weathered Limestone or brashy ironstone deposits combine to limit the available water for

crop growth. As a result significant droughtiness and topsoil stone content restrict the land to subgrade 3b.

Non agricultural

3.6 Areas mapped as Non Agricultural indicates areas of woodland, playing fields and dismantled railways.

Urban

3.7 The Victoria Mills complex and Poplar Barn have been mapped as urban.

Unsurveyed

3.8 At the eastern edge of the site land was left unsurveyed because the land is of archaeological value and under the proposed development it will become an archaeological park.

December 1992

S ESCOTT/ R ORPIN
Resource Planning Team
ADAS Statutory Unit
Cambridge

REFERENCES

GEOLOGICAL SURVEY OF ENGLAND AND WALES, 1967. Solid and drift edition sheet 152. 1:63,360 scale.

MAFF, 1974. Agricultural Land Classification Map No. 133. Provisional. 1:63,360.

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, 1983. Soils of Eastern England, sheet 4. 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 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.