Cambs 12/93

AGRICULTURAL LAND CLASSIFICATION

INTWOOD EXTENSION, NEAR NORWICH, NORFOLK

1. BACKGROUND

1.1 The site, an area of 19.1 hectares, is the subject of an application to extend existing sand and gravel workings and restore the land to agricultural and conservation after uses. ADAS Resource Planning Team undertook a detailed Agricultural Land Classification (ALC) and soil physical characteristics survey during February 1993. Soil inspections using a Dutch auger were made on a 100m grid basis and a soil pit was dug to assess subsoil conditions. Supplementary information was also utilised from soil pits dug on the original application area which overlaps with the northern area of the extension site. Riddling was undertaken to assess topsoil stone content and gradients were measured using a hand held optical reading clinometer.

1.2 On the published 1:63,360 scale ALC map sheet 126 (MAFF 1972) the whole site has been mapped as grade 3.

1.3 As mentioned in paragraph 1.1, a detailed survey was carried out in 1989 on a former application area, totalling 20.3 hectares and overlapping the northern part of the current site. This identified the land to be predominately subgrade 3b with a small area of subgrade 3a on the southern boundary. These gradings were based on the assumption that irrigation, although available on the farm, was not feasible because of the long distance from standpipes.

1.4 At the time of the survey the northern part of the site was in active use for mineral extraction with the remainder of the site under winter barley.

2.0 PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

2.1 Climate data for the site was interpolated from data contained in the published agricultural climatic dataset (Met Office 1989). This indicates that for the survey area's average altitude of 25m AOD, the annual average rainfall is 613mm (24.1"). The field capacity days are 119 and the moisture deficits for wheat and potatoes

are 117mm and 112mm respectively. These climatic characteristics do not impose any climatic limitation on the ALC grade of the site.

Altitude and Relief

2.2 The site is gently undulating with a valley running across the centre of the area in a north westerly direction. The highest land with a maximum altitude of 32m AOD is found in the south east corner. The land falls to a minimum altitude of 15m AOD in the valley bottom along the northern boundary. Gradients on the valley sides are typically between 3 and 6° except for a very small area on the northern boundary which was recorded at 9°. (The latter area is too small to map separately). 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 map sheet 161 (Geological Survey of Great Britain 1971) shows the site to comprise predominantly glacial sand and gravel overlying Cretaceous Upper Chalk at depth. A small area of boulder clay is also mapped on the western boundary of the site.

2.4 The Soil Survey of England and Wales have mapped the soils on two occasions, firstly in 1973 at a scale of 1:100,000 (Soils of Norfolk) and more recently in 1983 at a reconnaissance scale of 1:250,000. These two maps broadly agree and the most recent indicates the presence of the Burlingham 1 Association (*1) over the whole of the site. During the survey work the presence of a single light textured soil type was identified.

2.5 The soil profiles are freely draining (wetness class I) and typically comprise medium sandy loam (occasionally loamy medium sand) to a depth of 30/35 cm, overlying loamy medium sand (occasionally sandy clay loam) upper subsoils (50/70 cm). Lower subsoils comprise loamy medium sand or medium

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*1 Burlingham Association - Deep coarse and fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging. Some deep well drained coarse loamy and sandy soils.

sand (occasionally sandy clay loam or sandy clay). Topsoils are typically very slightly stony but occasionally on the valley sides become slightly to moderately stony. Subsoil stoniness is variable and ranges from 5-40%. The soil profiles are generally calcareous throughout.

3. AGRICULTURAL LAND CLASSIFICATION

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

3.2 The site has been mapped predominately as subgrade 3a with a sizeable area of non agricultural land in the northern part of the site which is currently an active area of mineral extraction. The table below shows the breakdown of the grades in hectares and % terms for the survey area.

AGRICULTURAL LAND CLASSIFICATION

Grade	ha	%
3a	12.2	64
Non Agricultural	6.9	36
TOTAL	19.1	100

Irrigation

3.3 The agricultural land is irrigated with standpipes located along the southern boundary. This irrigation facility enhances the potential of the agricultural land for crop production and consequently the ALC grade mapped takes into account the reduction in drought risk afforded by the irrigation.

Subgrade 3a

3.4 All the agricultural land within the survey area has been graded 3a. The light textured soils described in paragraph 2.5 in combination with the relatively dry climate results in a droughtiness imperfection which would limit land to 3b. However, because the availability of irrigation enhances the water available for crop growth the area has been graded 3a (good quality agricultural land).

3.5 Within the subgrade 3a area less droughty soils were encountered on the extreme western and eastern boundaries of the site but these represent too small an area to be mapped separately.

Non Agricultural

3.6 Current mineral workings have been mapped as non agricultural land.

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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.

Appendix 2

STATEMENT OF SOIL PHYSICAL CHARACTERISTICS

INTWOOD EXTENSION, NORWICH, NORFOLK

Area (19.1 hectares)

TOPSOIL	Texture	:	medium sandy loam (occasionally loamy medium sand.
	Colour	:	10YR4/3 dark brown
	Stone	:	typically 3-6% comprising small to medium, rounded and subrounded flints.
	Depth	:	30-35 cm
	Structure	:	cultivation zone - not applicable
	Boundary	:	abrupt and wavy
	Roots	:	many fine and very fine
UPPER SUBSOIL	Texture	:	loamy medium sand (occasionally sandy clay loam).
	Colour	:	variable typically 10YR5/6 yellowish brown, 10YR6/4 light yellowish brown, 10YR6/6 brownish yellow and 7.5YR4/6 strong brown.
	Stone	:	typically 5-10% rounded and subrounded flints, (occasionally 20-25%). Range 3-25%.
	Depth	:	50-70 cm
	Structure	:	moderately developed coarse angular/ subangular blocky.
	Consistence	:	Friable
	Porosity	:	slightly < 0.5% biopores. Worm channels tend to be vertical only.
	Boundary	:	abrupt and irregular
	Roots	:	common fine and very fine roots

LOWER SUBSOIL	Texture	:	loamy medium sand or medium sand (occasionally sandy clay loam or sandy clay).
	Colour	:	typically 10YR5/6 yellowish brown, 10YR6/6 and 10YR6/8 brownish yellow. Occasionally 10YR6/4 light yellowish brown and 7.5YR5/6 strong brown.
	Stone	:	variable in the range 5-40%, typically 5-10% subrounded and subangular flint.
	Depth	:	120 cm +
	Structure	:	structureless (occasionally moderately developed medium prisms in heavier textured subsoils).
	Consistence	:	typically friable, occasionally firm
	Porosity	:	approximately 0.5%
	Roots	:	few fine and very fine roots

Other notes:-

Soils are freely draining (wetness class I).

Soils are generally calcareous throughout.

REFERENCES

GEOLOGICAL SURVEY OF GREAT BRITAIN (ENGLAND AND WALES) 1975. Solid and Drift Edition Sheet 161 Norwich 1:50000.

MAFF 1972. Agricultural Land Classification Map Sheet 126 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.

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