

AGRICULTURAL LAND CLASSIFICATION

LAND AT CALDECOTT HALL, NORFOLK

1.0 INTRODUCTION

1.1 The site, an area of 35.7 hectares, is the subject of an application for the provision of leisure facilities at Caldecott Hall, Norfolk. MAFF surveyed the site in January 1992 at an auger boring density of approximately 1 boring per hectare. These borings were supplemented by 2 soil inspection pits in order to assess subsoil conditions.

1.2 On the published Agricultural Land Classification Map sheet no 137 (provisional, scale 1:63,360, MAFF 1973) the entire site is mapped as Grade 3. The current survey was undertaken in order to provide a more detailed representation of the agricultural land quality.

2.0 PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

2.1 Climate data for the site was obtained from the published agricultural climatic dataset (Met. Office 1989). This indicates that for the site's modal altitude of 15m AOD the annual average rainfall is 600 mm (23.6"). This data also indicates that the field capacity days are 112 and moisture deficits are 123 mm for wheat and 117 mm for potatoes. These climate characteristics do not impose any climatic limitation on the ALC grading of the survey site. However the dry climatic conditions require the soils to have high water holding capacities to avoid a droughtiness limitation.

Altitude and Relief

2.2 The survey site slopes gently from a maximum of 20m AOD on the western side of the site to a minimum of 10m AOD in a shallow dry valley feature on the eastern side of the site. Gradient and altitude do not constitute any limitation to the ALC grade.

Geology and Soils

- 2.3 The published, $\frac{1}{4}$ " to 1 mile, solid and drift geology map, sheet No 12, (Geological Survey of Great Britain, 1953) shows the majority of the site to comprise glacial sands and gravel with a band of glacial till along the northern edge of the site.
- 2.4 The Soil Survey of England and Wales have mapped the soils in the area on two occasions. Firstly in 1973, at a scale of 1:100,000, on a map entitled "Soils of Norfolk" and secondly in 1983 at a reconnaissance scale of 1:250,000. These maps broadly agree and the latter map indicates that the majority of the site comprises Wick 3 Association (*1) with a small area of Newport 4 Association (*2) along the southern boundary. Both these soil associations are typically coarse textured and well drained. The soils observed during the MAFF survey are generally consistent with the published maps although some heavier textured subsoils were encountered towards the northern end of the site. Three soil types were identified.
- 2.4.1 The first soil type represents the lightest textured soils on the site. These occur mainly along the southern boundary of the site but include isolated borings further north of this area. Profiles typically comprise very slightly stony medium sandy loams or loamy medium sand topsoils which overlie loamy sand upper subsoils becoming sand at depth. Although typically stone free, pockets of stone may be encountered in some profiles. These profiles are all well drained (Wetness Class I).

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- (*1) WICK 3 ASSOCIATION. Deep well drained coarse loamy often stoneless soils. Some similar sandy soils. Complex pattern locally.
- (*2) NEWPORT 4 ASSOCIATION. Deep well drained sandy soils. Some very acid soils with bleached subsurface horizons especially under heath or in woodland.

2.4.2 The second soil type represents a better bodied version of those soils described in section 2.4.1. It occurs over the majority of the site with the exception of the southern edge and the north eastern corner. Profiles comprise very slightly stony medium sandy loam topsoils with similar upper subsoils which typically become sandy at depth. These profiles are all well drained and usually contain only limited profile stone, although flinty pockets may be found.

2.4.3 The final soil type is derived from glacial till and occurs in the north eastern corner of the site. Profiles typically comprise medium sandy loam topsoils over sandy loam or sandy clay loam upper subsoils which become sandy clay or clay at depth. Chalky boulder clay was found at the base of some of these profiles. In the great majority of these profiles gleyed horizons were not encountered and therefore soils have been predominantly assessed as wetness class I.

3.0 AGRICULTURAL LAND CLASSIFICATION

3.1 The definitions of the Agricultural Land Classification grades are included in Appendix 1.

3.2 The table below shows the breakdown of the ALC grades for this site.

Agricultural Land Classification

<u>Grade</u>	<u>ha</u>	<u>%</u>
2	11.3	31.6
3a	19.7	55.2
3b	4.7	13.2
TOTAL	<u>35.7</u>	<u>100.0</u>

3.3 Grade 2

The grade 2 land is located at the northern end of the site. It is mainly associated with the glacial till derived soils described in section 2.4.3 and also the deep sandy loam variant of the soils described in section 2.4.2. The majority of these soils are well drained and have moderately good water holding capacities. However the

combination of the dry climate and the soil textures present results in a slight droughtiness limitation preventing this land from being grade 1.

3.3 Subgrade 3a

Approximately half the site has been graded 3a and is associated with the soils described in section 2.4.2. The coarse soil textures combined with the dry climate and occasional profile stone pockets result in these soils having a moderate droughtiness limitation. Droughtiness is therefore the overriding limitation to the grade.

3.4 Subgrade 3b

A small area at the southern end of the site has been graded 3b and is associated with soils described in section 2.4.1. These predominantly sandy textured soils have low water holding capacities and as a result are significantly droughty. Droughtiness is therefore also the overriding limitation to the grade to the 3b land.

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References

GEOLOGICAL SURVEY OF ENGLAND AND WALES (1953). Drift and Solid Geology, Sheet No 12, $\frac{1}{4}$ " to 1 mile scale.

MAFF (1973). Agricultural Land Classification Sheet 137, Provisional, 1:63,360 scale.

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

METEOROLOGICAL OFFICE (1989). Climate data extracted from the published Agricultural Climatic Dataset.

SOIL SURVEY OF ENGLAND AND WALES (1973). Map entitled "Soils of Norfolk" 1:100,000 scale.

SOIL SURVEY OF ENGLAND AND WALES (1983). Reconnaissance survey, sheet no. 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 includes 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 root 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 will affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. When 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 level 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.