AGRICULTURAL LAND CLASSIFICATION AND SOIL PHYSICAL CHARACTERISTICS REPORT

LAND AT BLUNDESTON CORNER, BLUNDESTON, NR LOWESTOFT, SUFFOLK

1.0 BACKGROUND

1.1 The site covers an area of 8.4 ha, and is the subject of an application for a sports complex.

1.2 ADAS Statutory Resource Planning Team undertook a detailed Agricultural Land Classification (ALC) and soil physical characteristics survey of the site during December 1995. A total of 9 auger borings were completed and these were supplemented by one soil inspection pit to provide more detailed information on subsoil conditions.

1.3 On the published 1:63 360 scale Provisional ALC map (sheet 137, MAFF 1973) all the site is shown as grade 2.

1.4 At the time of the survey the majority of the land was under winter cereals with a narrow strip of harvested asparagus across the site.

2.0 PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

2.1 Climate criteria are considered when classifying land as these may have an overriding limitation in terms of the agricultural use of the land. 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 these show that there is no overall climatic limitation affecting the site.

Table 1 : Climatic Interpolation

Grid Reference	TM 525 966
Altitude (m)	17
Accumulated Temperature (Day °C, Jan-June)	1408
Average Annual Rainfall (mm)	617
Moisture Deficit, Wheat (mm)	123
Moisture Deficit, Potatoes (mm)	119
Field Capacity Days	116
Overall Climatic Grade	1

Altitude and Relief

2.3 The northern half of the site is relatively flat with an approximate altitude of 17 m AOD. The south east corner of the site contains a shallow dry valley which runs in a south easterly direction, the land falling to approximately 11 m AOD. In the vicinity of the valley, slopes were recorded at approximately 4°. Neither altitude nor gradient on the site constitute a limitation to the ALC grade.

Geology and Soils

2.4 The published 1:50 000 scale drift geological map (Geol. Survey, 1990) shows the whole site to be mapped as part of the Lowestoft Till formation which contains mainly chalky and sandy clay deposits.

2.5 No detailed soil map exists of the area but the reconnaissance 1:250 000 scale soil maps "Soils of Eastern England" (Soil Survey of England and Wales 1983), shows the whole site to be covered by Gresham Association soils. In brief these soils are described as stoneless slowly permeable seasonally

waterlogged coarse loamy soils and silty over clayey soils. Some deep coarse loamy soils are affected by groundwater.

2.6 Detailed field survey work identified one variable soil type reflecting the underlying drift and till deposits.

2.7 Over the whole of the site topsoils comprise non calcareous, very slightly stony, medium sandy silt loam (occasionally medium sandy loam or medium clay loam). Upper subsoils are variable and change over very short distances. They range from sandy clay loam through to dense clay typically to 45/80 cms. Sometimes patches of lighter sandy textured soils are found within the upper subsoils. Regardless of textures, this horizon is non calcareous and is very slightly stony. The lower subsoil typically comprises a dense calcareous clay or non calcareous sandy clay. The calcareous clay contains 5-10% small rounded chalk pebbles together with a few flints. Occasionally at the junction of the upper and lower subsoil a narrow band of flints occur which sometimes extend into the lower horizons.

2.8 Typically soils are assessed as wetness class III (defined in Appendix 2), where slowly permeable clay is encountered at a shallow depth. Occasionally where lighter textured upper subsoils occur these profiles are classified as wetness class II.

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 breakdown of the individual grades found on the site is given in Table 2. A description of each grade is given in Appendix 3.

Table 2. Distribution of grades and subgrades

Grade	Area (ha)	% of site
Subgrade 3a	8.3	99
Other land	0.1	1
TOTAL	8.4	100

Subgrade 3a

3.2 The entire site has been graded 3a and comprises soils described in paragraph 2.7. Topsoils typically comprise very slightly stony coarse loamy (occasionally fine loamy) over variable subsoils.

The combination of profile texture and stoniness, soil structures and the relatively dry climate restrict the land to subgrade 3a due to a moderate droughtiness limitation.

3.3 Within the site, soils of a better quality do sporadically occur but they do not form discreet units and cannot be delineated separately.

Other land

3.4 A small area in the north east of the site comprises a farm building and storage area for machinery.

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REFERENCES

GEOLOGICAL SURVEY OF GREAT BRITAIN (ENGLAND AND WALES), 1990. Sheet 162 Great Yarmouth, Quaternary and Pre-Quaternary.

MAFF, 1973. Agricultural Land Classification Map. Provisional. Scale 1:63 360 Sheet 137.

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 4, "Soils of Eastern England". 1:250 000 scale.

SOIL SURVEY OF ENGLAND AND WALES, 1984. Soils and their use in Eastern England by C A Hodge *et al* Harpenden.

Appendix 1

STATEMENT OF PHYSICAL CHARACTERISTICS

Topsoil	Texture	:	medium sandy silt loam (occasionally *medium sandy loam or medium clay loam*)
	Colour	:	typically 10YR4/2 or 10YR4/3 (dark greyish brown or dark brown).
	Stone	:	typically 1-3% small and medium angular and subangular flints.
	Roots	:	common fine and very fine
	Boundary	:	abrupt, smooth
	Depth	:	30-35 cm
Upper Subsoil	Texture	:	variable ranging from sandy clay loam, sandy clay or clay. Also patches of lighter sandier material are present.
	Matrix Colour	:	sandy clay loam and sandy clay typically 10YR5/4, 5/6 and 5/8 (yellowish brown). Clay typically 10YR5/3 (brown).
	Stone	:	typically 1-3% medium and large angular and subangular flints.
	Structure	:	clay and sandy clay - moderately developed coarse angular blocky. Sandy clay loam - moderately developed coarse subangular blocky.
	Consistence	:	firm
	Porosity	:	<0.5% biopores
	Roots	:	common becoming few fine and very fine
	Boundary	:	clear, irregular
	Depth	:	typically 50/80 cm
Lower Subsoil	Texture	:	clay or sandy clay
	Matrix Colour	:	clay typically 2.5Y5/3, 5/2 and 5/1 (light olive brown, greyish brown and grey). Sandy clay 10YR5/4 and 5/3 (yellowish brown and brown).
	Stone	:	where clay is calcareous contains 5-10% small rounded chalk pebbles 2-5% medium and large subangular flints. (Occasionally 15-20% flints).
	Structure	:	typically well developed coarse and very coarse angular blocky.
	Consistence	:	very firm
	Porosity	:	<0.5% biopores
	Roots	:	few fine and very fine
	Depth	:	100cm+

Comments : Profiles typically assessed as wetness class III, occasionally wetness class II.

Occasionally narrow bands of flints between upper and lower subsoil.

Dense clay in lower subsoil is typically calcareous.

Upper and lower subsoils typically mottled, both grey and ochreous.

Appendix 2

Field Assessment of Soil Wetness Class

Soil Wetness Classification

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile. Six soil wetness classes are identified and defined in the table below.

Definition of Soil Wetness Classes

Wetness Class	Duration of Waterlogging[1]
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years[2].
II	The soil profile is wet within 70 cm depth for 31-90 days in most years **or**, if there is no slowly permeable layer within 80 cm depth, it is wet within 70 cm for more than 90 days, but only wet within 40 cm depth for 30 days in most years.
III	The soil profile is wet within 70 cm depth for 91-180 days in most years **or**, if there is no slowly permeable layer present within 80 cm depth, it is wet within 70 cm for more than 180 days, but only wet within 40 cm depth for between 31-90 days in most years.
IV	The soil profile is wet within 70 cm depth for more than 180 days but not wet within 40 cm depth for more than 210 days in most years **or**, if there is no slowly permeable layer present within 80 cm depth, it is wet within 40 cm depth for 91-210 days in most years.
V	The soil profile is wet within 40 cm depth for 211-335 days in most years.
VI	The soil profile is wet within 40 cm depth for more than 335 days in most years.

Soils can be allocated to a wetness class on the basis of quantitative data recorded over a period of many years or by the interpretation of soil profile characteristics, site and climatic factors. Adequate quantitative data will rarely be available for ALC surveys and therefore the interpretative method of field assessment is used to identify soil wetness class in the field. The method adopted here is common to ADAS and the SSLRC.

[1] The number of days specified is not necessarily a continuous period.

[2] 'In most years' is defined as more than 10 out of 20 years.

Appendix 3

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.