Cambs 09/92

AGRICULTURAL LAND CLASSIFICATION INCORPORATING SOIL PHYSICAL CHARACTERISTICS, FOR PROPOSED BORROW PITS AT KENNET

1. BACKGROUND

1.1 The site comprises two separate areas of 34 hectares in total and is the subject of an application for proposed borrow pits adjacent to the A11 road at Kennet, Cambs.

1.2 MAFF surveyed the site in February 1992 at an auger boring density of approximately 1 boring per hectare. Soils pits were also dug in order to provide supplementary information about subsoil conditions.

2. SITE PHYSICAL CHARACTERISTICS

2.1 Climate

Climate data for the site was obtained from the published agricultural climatic dataset (Met. Office, 1989). This indicates that for the site's mid range altitude of 25 m AOD the annual average rainfall is 583 mm (30"). This data also indicates that the field capacity days are 105 and moisture deficits are 117 mm for wheat and 113 mm for potatoes. These climatic characteristics do not impose any climatic limitation on the ALC grading of the survey site.

2.2 Altitude and Relief

The northern and southern sites both comprise gently undulating land with average altitudes of 23 m AOD and 27 m AOD respectively. Gradient and altitude do not constitute limitations to the ALC grading of the survey site.

3.0 AGRICULTURAL LAND CLASSIFICATION

3.1 The definitions of the Agricultural Land Classification grades are included in Appendix 2.

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

AGRICULTURAL LAND CLASSIFICATION

	Grade	ha	%
Northern Site	3a	7.8	23
	3b	2.1	6
	Non Ag.	0.1	-
Southern Site	2	22.9	67
	3a	0.2	1
	Non Ag.	0.9	3
Site Total		34	100

3.3 Irrigation

The southern site is irrigated which significantly enhances the potential of soils on this site and as a result the ALC grades assigned to this area take into account the reduction in drought risk.

3.4 Grade 2

The majority of the southern site has been graded 2. The majority of this land is associated with the soils described in paragraph 4.2.2. The availability of irrigation water enhances the water holding capacity of these soils and as a result they are only slightly droughty. Locally topsoil stone content (> 2 cm) may also limit this land to ALC grade 2. Slight droughtiness and occasionally topsoil stone content are therefore the overriding limitations to the ALC grade*.

* More or less droughty individual borings within this area of grade 2 occur randomly and are not possible to delineate separately at this scale.

3.5 Subgrade 3a

The majority of the northern site has been mapped as subgrade 3a and is associated with the better bodied and often less stony variant of the soils described in paragraph 4.2.1. The coarse soil textures combined with the profile stone content, result in these soils having a reduced water holding capacity. Droughtiness is therefore the overriding limitation to the grade.

3.6 Subgrade 3b

The remaining area in the north western corner of the northern site has been graded 3b and is associated with the lighter textured variant of the soils described in paragraph 4.2.1. These soils are significantly droughty and therefore droughtiness is the overriding limitation to the grade.

4.0 SOIL PHYSICAL CHARACTERISTICS

4.1 Geology

The published 1:50,000 drift edition geology map sheet 188 (Geological Survey of England and Wales 1981) shows the northern site to mainly comprise third terrace deposits with middle chalk outcropping in the south eastern corner. This map also shows the southern site to comprise mainly middle chalk.

4.2 Soils

During this survey 2 main soil types were identified.

4.2.1 Soil Mapping Unit 1 (refer Appendix 1)

These soils occur over most of the northern site and as isolated borings over the southern site. Profiles typically comprise very slightly stony medium sandy loam topsoils over similar or stonier upper-subsoils becoming loamy medium sand at depth. A lighter textured variant of these soils occurs in the north western corner of the northern site and typically comprises sandy loam topsoils with very

slightly to slightly loamy medium sand subsoils becoming medium sand at depth. In both these variants horizons of heavier material may be encountered at depth.

4.2.2 Soil Mapping Unit 2 (refer Appendix 1)

These chalk rubble derived soils occur over the majority of the southern site and at isolated borings over the northern site. They comprise very slightly stony medium sandy loam topsoils over similar upper subsoils becoming rootable chalky material which is often impenetrable at depth.

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APPENDIX 1

SOIL DESCRIPTIONS

Mapping Unit 1

Topsoil	Texture	:	medium sandy loam
	Colour	:	10YR 4/3
	Stone	:	typically 1-5% flints
	Roots	:	many fine and very fine roots
	Depth	:	35 cm
Upper Subsoil	Texture	:	medium sandy loam or loamy medium sand.
	Colour	:	10YR 4/6
	Stone	:	typically 5-10% flints
	Roots	:	common fine and very fine
	Structure	:	moderately developed medium subangular blocky.
	Consistence	:	friable
	Depth	:	45/50 cm
Lower Subsoil	Texture	:	loamy medium sand, occasionally medium sandy loam.
	Colour	:	10YR 6/6
	Stone	:	typically 5% flints
	Roots	:	common fine and very fine becoming few 70 cm +.
	Structure	:	weakly developed medium subangular blocky.
	Consistence	:	very friable
	Depth	:	120 cm

Mapping Unit 2

Topsoil	Texture	:	medium sandy loam
	Colour	:	10YR 3/4
	Stone	:	1-5% flints
	Roots	:	common fine and very fine
	Depth	:	40 cm
Upper Subsoil	Texture	:	medium sandy loam
	Colour	:	10YR 5/4
	Stone	:	5% chalk stones
	Roots	:	common fine and very fine
	Depth	:	55 cm
Lower Subsoil	Texture	:	hard chalky sand mix materials with soil 'funnels' (medium sandy loam)
	Colour	:	10YR 7/3 with 10 YR 5/6 soil 'funnels'
	Stone	:	15% white chalk
	Structure	:	too hard to assess
	Roots	:	few roots to 65 cm
	Depth	:	80 cm +

Additional Information

$CaCo_3$: All horizons are calcareous or very calcareous. Chalky sand mix material comprises weathered chalky material, chalky rubble within a cemented matrix typically textures to medium sandy loam or clay loam.

Appendix 2

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 level of yields. It is mainly suited to grass with occasional arable crops (eg cereal and forage crops) the yields of which are variable. In moist 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.