AGRICULTURAL LAND CLASSIFICATION

LAND AT SOUTH WOOTTON, NR KINGS LYNN, NORFOLK

1. BACKGROUND

1.1 The survey site comprises 44 hectares which is subject to an application for residential development at South Wootton, near Kings Lynn, Norfolk. MAFF surveyed the site in August 1990 in order to assess the agricultural land quality. This survey was conducted at an auger boring density of one per hectare and supplemented by 3 soil inspection pits in order to assess 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 median altitude of 5m AOD the annual average rainfall is 633mm (25.9"). This data also indicates that field capacity days are 123 and moisture deficits are 113 mm for wheat and 108 mm for potatoes. These climatic characteristics do not impose any climatic limitations on the ALC grading of the site.

2.2 Altitude and Relief

The site rises gently from the western boundary of the site to a maximum altitude of 10m AOD on the eastern edge of the site. Gradient and altitude do not impose any limitation to the ALC grade.

3.0 SOIL PHYSICAL CHARACTERISTICS

3.1 Geology

The published geology map, $\frac{1}{4}$ inch to 1 mile drift edition, sheet no 12, shows the survey area to comprise mainly alluvium, peat and fen silts with some gravels or loams on the eastern side of the site.

3.2 Soils

The survey area has been mapped on two occasions firstly at 1:100,000 scale (1973) on a map entitled 'Soils of Norfolk' and secondly at a reconnaissance scale of 1:250,000 (1983). These maps show the survey site to comprise Blackwood Association* (1983) on the eastern side and Blacktoft Association** (1983) on the western side.

During this survey a detailed inspection of the soils identified three soil types.

3.2.1 Soil Type 1

These marine alluvium derived, well bodied soils occur at the northern tip of the site and along the majority of the western edge. Profiles typically comprise silty clay loam or occasionally medium clay topsoils over similar upper subsoils. Commonly these soils become heavy silty clay loams or silty loams at depth with occasional horizons of lighter textures at certain locations. These soils are porous and are relatively freely draining (Wetness Class II).

3.2.2 Soil Type 2

These coarser textured soils occur on the eastern fringe of soil type 1. Profiles typically comprise very slightly to slightly stony sandy loam topsoils over moderately stony sandy loam or loamy sand upper subsoils. The soils often become stoneless sands at depth. All profiles are freely draining (Wetness Class I) and are non calcareous throughout.

* Blackwood Association (1983). Deep permeable sandy and coarse loamy soils. Groundwater controlled by ditches.

** Blacktoft Association (1983). Deep stoneless permeable calcareous fine and coarse silty soils. Some calcareous clayey soils. Flat land. Groundwater controlled by ditches and pumps.

3.2.3 Soil type 3

These stonier soils predominantly occur on the higher ground on the eastern side of the site. They typically have slightly to moderately stony loamy sand or occasionally sandy loam topsoils over moderately stony loamy sand subsoils. As with soil type 2 these soils are freely draining (Wetness Class I) and non calcareous.

3.2.4 Relic iron pans were found at depth within some profiles of soil types 2 and 3. These pans were found to be only slightly acidic and did not impede root penetration.

4. AGRICULTURAL LAND CLASSIFICATION

4.1 The definitions of the Agricultural Land Classification (ALC) grades are included in Appendix 1.

4.2 The table below shows the ALC grades for the survey site.

	Agricultural Land Classification	
Grade	ha	%
2	10.7	24.3
3a	22.9	52.1
3b	10.3	23.4
Non Agricultural	0.1	0.2
TOTAL	44.0	100.0

4.3 Grade 2

The grade 2 land is entirely associated with the variant of soil type 1 (paragraph 3.2.1) with medium silty clay loam topsoils. These soils are porous but gleyed within 40 cm and throughout the subsoils resulting in a slight wetness limitation (ie. Wetness Class II). The fine nature of textures in this low rainfall area also results in a slight droughtiness risk. As a result both slight wetness and slight droughtiness limitations prevent this land from being grade 1.

4.4 Subgrade 3a

Two main situations occur

4.4.1 The majority of the subgrade 3a land is associated with soil type 2 (paragraph 3.2.2). The combination of coarse textures and moderate subsoil stoniness results in a reduced water capacity available to the crop. As a result a moderate droughtiness risk limits the land to subgrade 3a.

4.4.2 A small area of subgrade 3a land located to the north of the site is associated with the variant of soil type 1 (paragraph 3.2.1) with heavy clay loam or clay topsoils. These soils are porous but gleyed from 30/35 cm; as a result they have a Wetness Class of II. This, combined with the heavy topsoil textures and the non calcareous nature of this soil results in moderate workability and wetness limitations. These constitute the overriding limitations to the ALC grade.

4.5 Subgrade 3b

This area is associated with soil type 3. It is located on the higher ground towards the eastern side of the site which branches westwards north of Marsh Lane. The coarse textures combined with the presence of flints and ironstone in varying densities throughout the soil profile results in a low water holding capacity potential for these soils. This area is therefore significantly droughty and has been graded 3b with droughtiness constituting the overriding limitation to the grade.

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References

GEOLOGICAL SURVEY OF ENGLAND AND WALES (1933).
Drift edition geology map sheet 12.
Scale ¼" to 1 mile.

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

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

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

SOIL SURVEY OF ENGLAND AND WALES (1983). "The Soils of Eastern England" Sheet 4, scale 1:250,000.

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 with affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. When more demanding crops and 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.