Cambs 67/89 C7/89

AGRICULTURAL LAND CLASSIFICATION AND SOIL PHYSICAL CHARACTERISTICS
LAND AT STOWE FARM, (NO. 2) WEST DEEPING, LINCS

1. BACKGROUND

1.1 The site, an area of 75.4 ha, is the subject of an application, by Redland Aggregates Ltd, for the extraction of sand and gravel at Stowe Farm, West Deeping, Lincs. MAFF surveyed the site in November 1989 to assess the agricultural land quality and the soil physical characteristics.

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 10m AOD the annual average rainfall is 578mm (22.8"). This data also indicates that field capacity days are 109 and moisture deficits are 119mm for wheat and 114mm 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 land lies fairly level across the site ranging in altitude from 10 to 12m AOD. Gradient and altitude do not constitute limitations to the ALC grade.

3. AGRICULTURAL LAND CLASSIFICATION (refer to ALC map)

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

3.2 The table below shows the ALC grade for the survey area.

Agricultural Land Classification		
Grade	ha	%
3a	34.5	45
3b	35.3	47
Non Agricultural	5.6	8
TOTAL	75.4	100

3.3 Subgrade 3a

Approximately 45% of the site has been graded 3a. The soils are moderately droughty* and typically comprise medium clay loams of moderate depth over gravelly material. The occurrence of flints, in varying densities, throughout the soil profile has a moderate limiting effect on the water-holding capacity of this soil. As a result droughtiness is the major limitation to the ALC grade.

3.4 Subgrade 3b

The remaining agricultural land has been graded 3b. The soils are significantly droughty** and are typically gravelly at shallow depths. The occurrence of many flints throughout the subsoil has a significant limiting effect on the available moisture capacity of this soil. As a result the droughtiness limitation excludes the land from a higher grade.

4. SOIL PHYSICAL CHARACTERISTICS

4.1 Geology

The published 1:50,000 solid and drift edition geology sheet 157- (Stamford) shows the survey area to comprise fen and terrace gravel deposits over a bedrock of Oxford Clay.

* At a few locations more droughty or less droughty variants of this soil type occur, however they cover too small an area to delineate separately.

** At a few locations less droughty variants of this soil type occur, however they cover too small an area to delineate separately.

4.2 Soils

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

4.2.1 Soil Type A (refer Appendix 1 and the Soil Map).

These soils cover approximately half of the survey area. They typically comprise very slightly stony medium clay loams over slightly to moderately stony medium clay loams, sandy clay loams or sandy loams. The subsoil textures, density of stones and depth at which these two factors occur varies markedly with location. At depth (50/80cm+) these soils overlie gravelly material which comprises very stony medium sand.

4.2.2 Soil Type B (refer Appendix 1 and the Soil Map).

The remaining survey area has been mapped as Soil Type B where stonier soil variants occur. The soils typically comprise slightly stony medium clay loam topsoils over gravelly material, slightly stony medium clay loams or sandy loams. Where a subsoil exists it only extends for approximately 5-10cm before merging into gravelly material at depths of 40/45cm. The gravelly material generally consists of very stony medium sand.

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Resource Planning Group
Cambridge RO.

Appendix 1

DESCRIPTION OF SOIL PHYSICAL CHARACTERISTICS

SOIL TYPE A

Topsoil	texture	:	medium clay loam
	stone	:	ranges from 3-5% soil volume, comprising small and medium flints, and occasionally limestone fragments.
	depth	:	35cm
Upper Subsoil	texture	:	medium clay loam
	stone	:	slightly stony or occasionally moderately stony, mainly comprising very small and small flints.
	structure	:	weakly developed medium subangular blocky, friable consistence.
	depth	:	40/60cm.
Lower Subsoil	texture	:	medium clay loam, sandy clay loam or sandy loam.
	stone	:	slightly or moderately stony, comprising mainly very small and small flints.
	structure	:	as above or where moderately stony, too stony to assess.
	depth	:	50/80cm+
Gravelly Material		:	structureless very stony medium sand and gravel (comprising mainly small and very small flints).

SOIL TYPE B

Topsoil	texture	:	medium clay loam
	stone	:	slightly stony or occasionally very slightly stony.
	depth	:	35cm.
Subsoil (where it occurs)	texture	:	medium clay loam or sandy loam
	stone	:	slightly stony (or occasionally moderately stony), mainly very small flints.
	structure	:	weakly developed medium subangular blocky; friable consistence.
	depth	:	40/45cm.
Gravelly Material		:	structureless medium sand and gravel (50-70% flints, mainly very small and small in size).

Additional Information

Drainage	:	well drained (wetness class I).
$CaCO_3$	:	Soil profiles are typically calcareous at all depths.
Field pH	:	7.0
Rooting	:	few to common fine and very fine roots throughout all soil profiles.

Very slightly stony	:	1-5%
Slightly stony	:	6-15%
Moderately stony	:	16-35%
Very stony	:	36-70%

Appendix 2

Grade 3 - good to moderate quality agricultural land

Land with moderate limitations which affect the choice of crops, timing and time of cultivation, harvesting or the level of yield. Where ore demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.

Subgade 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.

Non agricultural

'Soft' uses where most of the land could be returned relatively easily to agriculture, including: golf courses, private parkland, public open spaces, sports fields, allotments and soft-surfaced areas on airports/airfields. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

References

GEOLOGICAL SURVEY OF ENGLAND AND WALES 1975
Drift edition geology sheet 157 (Stamford)
Scale 1:50,000

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

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

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