

Cambr 26/90

AGRICULTURAL LAND CLASSIFICATION AND  
SOIL PHYSICAL CHARACTERISTICS  
RECTORY FARM, WEST DEEPING, LINCS

1. BACKGROUND

1.1 The site, an area of 109.5 ha, is the subject of an application, by Redland Aggregates Ltd, for the extraction of sand and gravel at Rectory Farm, West Deeping, Lincs. MAFF surveyed the site in June 1990 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 dataset (Met Office, 1989). This indicates that for the site's median altitude of 10m AOD the annual average rainfall is 576mm (22.7"). This data also indicates the field capacity days are 107 and moisture deficits are 120mm for wheat and 115mm 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 11m 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 overleaf shows the ALC grades for the survey area.

AGRICULTURAL LAND CLASSIFICATION

Grade	ha	%
3a	71.9	66
3b	36.5	33
Agricultural Buildings	<u>1.1</u>	<u>1</u>
TOTAL	<u>109.5</u>	<u>100</u>

3.3 Subgrade 3a

The majority of the site has been graded 3a. The soils are moderately droughty\* and typically comprise 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 droughtiness excludes the land from a higher grade.

4. SOIL PHYSICAL CHARACTERISTICS

4.1 Geology

The geology of the area has been mapped on a number of occasions; in 1978 (Stamford) and 1984 (Peterborough) at a scale of 1:50,000 and in 1981 at a scale of 1:25,000; these maps show the site to comprise fen and terrace gravels over a bedrock of Oxford Clay.

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

\*\* In a small area towards the south-eastern edge of the site profiles have a wetness class of III, as a result significant drainage and workability limitations restrict this land to subgrade 3b.

## 4.2 Soils

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

### 4.2.1 Soil Type A (refer to Appendix 1 & the Soil Map)

These soils cover the majority of the site. They typically comprise very slightly stony medium clay loams to depths 45/55cms (or occasionally 70/80cms) over lower subsoils of slightly or moderately stony medium clay loams which merge into gravelly material at depth (60/95cms+). Occasionally the lower stony horizons comprise textures of sandy loam or sandy clay loam. Depth to and density of stones within these brashy horizons varies with location.

### 4.2.2 Soil Type B (refer to Appendix 1 & the Soil Map)

In the vicinity of the two farms a stonier soil variant occurs; this area has been mapped as Soil Type B. The soils typically comprise very slightly stony medium clay loam topsoils over moderately stony medium clay loams or sandy loams or occasionally gravelly material. Where a subsoil exists it only extends for approximately 10/15cms before merging into gravelly material at depths of 40/45 cms. The gravelly material consists of very stony loamy medium sand.

### 4.2.3 Soil Type C (refer to Appendix 1 & the Soil Map)

The south-east corner of the site has been mapped as Soil Type C where better bodied soils predominate. The soils generally comprise heavy clay loams of variable depth over gravelly material. Subsoil stone ranges from 3-20%; depth to and percentage of stone within these stony horizons varies with location. In the lower horizons

where subsoils are moderately stony (c.40/55cms+) textures comprise sandy clay loams. Depth to the gravelly material varies markedly with location across this area; the range is 40 to 85cms.

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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 2-5% soil volume, small & medium  
flints, & occasional limestones  
depth : 30cm

Upper

Subsoil texture : medium clay loam  
stone : 2-5% flints; mainly small  
structure : weakly developed medium subangular blocky,  
friable consistence  
depth : 45/55cm (occasionally 70/80cm)

Lower

Subsoil texture : medium clay loam or occasionally sandy loam  
where moderately stony  
stone : slightly or moderately stony  
structure : as above or where moderately stony too stony  
to assess  
depth : 60/65cm (occasionally 70/95cm)

Gravelly

Material : structureless very stony loamy medium sand  
(stone % ranges from 45-70%, with a median of  
60%) stones comprise mainly small & very small  
flints. Textures often become medium sands at  
depth.

SOIL TYPE B

Topsoil texture : medium clay loam  
stone : very slightly stony  
depth : 30cm

Subsoil

(where it exists)

texture : Medium clay loam or medium sandy loam  
stone : moderately stony, mainly small & very small flints  
structure : weakly developed coarse/medium subangular blocky or too stony to assess  
depth : 40/45cm (occasionally 50cm)

Gravelly

Material : structureless loamy medium sand & flints (45-70%; median 60%) textures often medium sand at depth.

SOIL TYPE C

Topsoil texture : heavy clay loam  
stone : very slightly stony  
depth : 30cm

Upper

Subsoil texture : heavy clay loam (or occasionally clay)  
stone : very slightly to moderately stony  
structure+: moderately to weakly developed medium subangular blocky, structures are weaker where profiles are more stony  
depth : 40/55cm

Lower

Subsoil texture : sandy clay loam  
(where it exists) stone : moderately stony (mainly small flints)  
structure/: weakly developed medium & coarse subangular blocky  
depth : 60/85cm

/ :where profiles are gleyed to the south-east structures comprise weakly developed coarse blocks.

Gravelly

Material : structureless very stony loamy medium sand  
(median stone % of 60%)

Additional information

Drainage : mainly wetness class I, occasionally II or III

Rooting : many to common throughout

Very slightly stony : 1-5%

Slightly stony : 6-15%

Moderately stony : 16-35%

Very stony : 36-70%

## 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 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 which 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.

## REFERENCES

GEOLOGICAL SURVEY OF ENGLAND & WALES 1975

Solid & drift edition geology map 157 (Stamford)

Scale 1:50,000

GEOLOGICAL SURVEY OF ENGLAND & WALES 1984

Solid & drift edition geology map 158 (Peterborough)

Scale 1:50,000

INSTITUTE OF GEOLOGICAL SCIENCES 1981

The Sand & Gravel Resources of the country between Stamford and Peterborough, Mineral Assessment Report No 80 Sheets TF00,01

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

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