

AGRICULTURAL LAND CLASSIFICATION AND SOIL PHYSICAL CHARACTERISTICS

LAND WEST OF FORD LANE ALRESFORD ESSEX

1. BACKGROUND

1.1 The site, an areas of 9.5 hectares, is the subject of an application, by Alresford Sand and Ballast for the extraction of sand and gravel on the land to the west of Ford Lane, Alresford. MAFF surveyed the site in September 1991 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 (Mat Office, 1989). This indicates that for the site's representative altitude of 20m AOD the average annual rainfall is 558mm (22 inches). This data also indicates that the field capacity days are 95 and moisture deficits are 130mm (5 inches) for wheat and 128mm (5 inches) for potatoes. The climatic characteristics do not impose any climatic limitation on the ALC grading of the survey site.

2.2 Altitude and Relief

The land comprises of a south west facing valley site ranging in altitude from 22m on the northern edge falling to 10m AOD adjacent to Sixpenny Brook.

There is an 8-10° slope, running parallel to the stream for part of the site. This steep gradient constitutes a significant limitation which restricts the ALC grade to 3b. A small wooded valley dissects the site, this is shown as Non Agricultural land.

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 majority of the site (8.7 ha, 91.6%) was graded 3b, the remainder was non-agricultural land (0.8 ha, 8.4%) giving the total area of the site to be 9.5 ha.

3.3 Irrigation

The majority of the land on site is droughty and would benefit from irrigation, however a supply of irrigation water is not available.

3.4 Subgrade 3b

All the land has been graded 3b in association with droughty soils of soil type 1 and the wet soils of type 2. The soil types are described fully in paragraphs 4.2.1 and 4.2.2 respectively.

- 3.5 The coarse textured nature of soil type 1 and the varying densities of flints throughout the soil profile combined to impose a significant limitation on the potential for this soil to retain available water. As a result droughtiness restricts this level to subgrade 3b.
- 3.6 Soil type 2, is found on the low lying land adjacent to Sixpenny Brook. There was evidence of gleying from 30cm, but the silty loam texture of the subsoil was not slowly permeable. However the water table was observed at 100cm in September (the driest part of the year) suggesting that the heavy mottling was indicative of waterlogged conditions within 40cm for at least 91 days each year, rendering the soil to a wetness class of IV (Table 11, MAFF 1988). Consequently the significant wetness limitation restricts the land to subgrade 3b.

4. SOIL PHYSICAL CHARACTERISTICS

4.1 Geology

The geology of the area has been mapped at 1:250,000 scale (Geol. Survey 1931) and shows the area to comprise mainly glacial sand and gravel with London Clay and clay gate beds deposits along the river valley.

4.2 Soils

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

4.2.1 Soil Type 1 (refer to Appendix 1 and the soil map).

This soil covers the majority of the site. It typically comprises medium sandy loam (or occasional loamy medium sand) topsoils with 5% stones over subsoils of loamy medium sand with up to 20% flints. Below depths of approximately 70cm this becomes a slightly stony medium sand, which continues to 150cm plus.

4.2.2 Soil Type 2 (refer to appendix 1 and the soil map).

The soil within the valley floor typically comprises a non-calcareous, stone free medium clay loam topsoils over fine sandy silt loam subsoils with some medium sandy pockets below 100cm.

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APPENDIX 1

Description of soil physical characteristics.

Soil type 1

Topsoil texture : Medium sandy loam or occasionally loamy medium sand.
colour : Dark brown (10YR33)
stone : Typically 5%, occasionally 10% soil volumes small and medium flints
depth : 30cm
Boundary : Abrupt/smooth

Upper subsoil texture ; Loamy medium sand
colour : Dark yellowish brown and yellowish brown (10YR56 & 46)
stone : 20-25% flints, small and medium in size
structure : Single grain structureless
consistence : Loose
depth : 70cm
Boundary : Clear wavy

Lower subsoil texture : Medium sand
colour : Yellowish brown (10YR58)
stone : 10-15% flints, small in size
structure : Single grain, structureless
consistence : Loose
depth : 120cm +

Soil Type 2

Topsoil texture : Medium silty clay loam
colour : 10YR33 (dark brown)
stone : less than 2% flints
depth : 35cm
Boundary : Abrupt and smooth

Subsoil texture : Silt loam
colour : 10YR61 (light grey)
stones : Stoneless
structure : Moderately developed coarse prismatic
consistence : Firm
depth : 120cm +

Additional information

Wetness Class : I or IV depending on depth from the surface of the ground water levels.

Calcium Carbonate : Profiles non calcareous throughout.

Rooting : Roots seen to 120cm in all profiles

APPENDIX 2

DESCRIPTION OF THE GRADES AND SUBGRADES

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 usually can 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, harvest 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 level of yields. It is mainly suited to grass with occasional arable crops (eg cereals and forage crops) the yields 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 and Wales 1931. Drift edition geology sheet 16; scale 1/4" to 1 mile.

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

Meteorological Office 1989. Climate data extracted from the published Agricultural Climatic Dataset.