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Maidstone Borough Local Plan
Site 50 : Land north of the Chiltern Hundreds, Penenden Heath
Agricultural Land Classification
ALC Map and Report
August 1994

AGRICULTURAL LAND CLASSIFICATION REPORT

MAIDSTONE BOROUGH LOCAL PLAN
SITE 50 : LAND NORTH OF THE CHILTERN HUNDREDS, PENENDEN HEATH

1. Summary

1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality for 47 sites within the borough of Maidstone Borough of Kent. The work forms part of MAFF's statutory input to the preparation of the Maidstone Borough Local Plan.

1.2 Site 50 comprises 12.5 hectares of land south of the M20 and west of Sittingbourne Road in the village of Penenden Heath. An Agricultural Land Classification (ALC) survey was carried out during August 1994. The survey was undertaken at a detailed level of approximately one boring per hectare of agricultural land surveyed. A total of 6 borings and two soil inspection pits were described in accordance with MAFF's revised guidelines and criteria for grading the quality of agricultural land (MAFF, 1988). These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose a long term limitation on its use for agriculture.

1.3 The work was carried out by the Resource Planning Team of the Guildford Statutory Group of ADAS.

1.4 At the time of survey the agricultural land on the site was unmanaged grassland. The area mapped as urban comprises a house and garden. The woodland mapped is that of mature deciduous trees. The land shown as being in non-agricultural use comprises a footpath.

1.5 The distribution of grades and subgrades is shown on the attached ALC map and the areas are given in the table below. The map has been drawn at a scale of 1:10,000. It is accurate at this scale, but any enlargement would be misleading.

Table 1 : Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site	% of Agricultural Land
2	0.8	6.4	17.8
3a	3.7	29.6	82.2
Urban	0.1	0.8	100.0 (4.5 ha)
Non-agricultural	0.2	1.6	
Woodland	7.7	61.6	
Total area of site	12.5	100.0	

1.6 Appendix I gives a general description of the grades, subgrades and land use categories identified in the survey. The main classes are described in terms of the

type of limitation that can occur, the typical cropping range and the expected level and consistency of yield.

1.7 The majority of agricultural land surveyed has been classified as Subgrade 3a, good quality, because of a moderate soil droughtiness limitation. In the eastern field profiles are sandy-textured. The remaining land classed as 3a comprises flinty profiles. Land graded 3a has insufficient available water for uptake by crop roots. This is caused by the interaction between the soil textures and profile stone contents with the climatic regime at this site. The remaining agricultural land has been classed as Grade 2, very good quality, because of slight soil droughtiness or wetness limitations. Soil wetness is limiting where seasonally fluctuating groundwater causes gleying at shallow depths. Such soil wetness may act to slightly affect plant growth. Land affected by slight soil droughtiness has more profile available water, in comparison to that graded 3a, because of lower stone contents and more moisture retentive lower subsoils and it is therefore graded 2.

2. Climate

2.1 The climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe limitations will restrict land to low grades irrespective of favourable site or soil conditions.

2.2 The main parameters used in the assessment of an overall climatic limitation are average annual rainfall, as a measure of overall wetness, and accumulated temperature (degree days Jan-June), as a measure of the relative warmth of a locality.

2.3 A detailed assessment of the prevailing climate was made by interpolation from a 5km gridpoint dataset (Met. Office 1989). The details are given in the table below and these show that there is no overall climatic limitation affecting the site. The crop adjusted soil moisture deficits at this locality are relatively high in a regional context. High soil moisture deficits increase the likelihood of soil droughtiness limitations.

2.4 No local climatic factors such as exposure or frost risk are believed to affect the site.

Table 2 : Climatic Interpolation

Grid Reference	TQ777563
Altitude (m)	70
Accumulated Temperature (degree days, Jan-June)	1426
Average Annual Rainfall (mm)	700
Field Capacity (days)	143
Moisture Deficit, Wheat (mm)	113
Moisture Deficit, Potatoes (mm)	107
Overall Climatic Grade	1

3. Relief

3.1 The agricultural land on the site falls gently in the western field from approximately 75m AOD to approximately 70m AOD. Most of the eastern field is flat, lying at approximately 70m AOD, but falling moderately steeply to lie at approximately 65m AOD adjacent to the M20. Nowhere on the site does gradient or relief impose any restriction to agricultural land quality. The woodland occupies undulating land, falling from approximately 70m AOD in the vicinity of Rose Cottage to approximately 60m AOD adjacent to the M20.

4. Geology and Soil

4.1 British Geological Survey (1976), Sheet 288, shows the entire site to be underlain by Folkestone Beds of the Lower Greensand.

4.2 Soil Survey of England and Wales (1983), Sheet 6, maps the site as in urban use. To the north of the site soils of the Fyfield 3 Association are mapped. These soils are described as 'well drained coarse loamy and sandy soils over sands and sandstone. Some very acid sandy soils with bleached subsurface horizons on heaths and in woodland' (SSEW, 1983).

4.3 Detailed field examination generally found well drained soils which are sandy textured in the east of the site and flinty in the west of the site.

5. Agricultural Land Classification

5.1 Table 1 provides the details of the area measurements for each grade and the distribution of each grade is shown on the attached ALC map.

5.2 The location of the soil observation points are shown on the attached sample point map.

Grade 2

5.3 Just under one-fifth of the site has been classified as Grade 2, very good quality, because of minor soil wetness or droughtiness limitations. Where soil droughtiness is limiting non-calcareous sandy clay loam topsoils overlie similarly textured upper and lower subsoils. At approximately 80 cm depth these overlie an horizon of fine sandy loam which continues to depth. These profiles are stoneless to very slightly stony throughout, containing 0-5% total flints by volume, and are moderately structured. The interaction between these soil textures, ~~profile stone contents and structures~~ with the relatively dry local climate which prevails at this locality acts to impart a minor restriction on amount of soil ~~profile~~ water available for uptake by crop roots. This may slightly reduce the level and consistency of crop yields, and give rise to a minor risk of drought stress for those crops which are grown.

5.4 Where soil wetness is limiting, non-calcareous medium clay loam topsoils and upper subsoils overlie lower subsoils comprising fine sandy silt loams. Upper subsoils are slightly stony (c. 10% total flints by volume), but other horizons are slightly less stony (c. 0-5% total flints by volume). These profiles are subject to fluctuating groundwater levels, as evidenced by gleying within 40 cm, and as such are assigned to Wetness Class II. The interaction between this slight impedance to drainage and topsoil textures with the relatively dry climatic regime which prevails at this site means that this land is subject to minor restrictions on the flexibility of cropping, stocking and cultivations.

Subgrade 3a

5.5 The majority of agricultural land surveyed has been classified as Subgrade 3a, good quality, because of a moderate soil droughtiness limitation. The flatter land in the east of the mapping unit is so limited because of sandy textured profiles, whereas the slightly higher land is restricted by flints within the soil profile. The sandy profiles typically comprise non-calcareous medium sandy loam topsoils. These overlie ~~medium sandy loam~~ subsoils which pass into medium sand at approximately 70 cm depth. These profiles are stoneless and have moderately structured subsoils. The interaction between these sandy textures and subsoil structures with the relatively dry climate which prevails at this locality means that the amount of soil ~~profile~~ water available for uptake by crop roots is moderately restricted. This may reduce the level and consistency of crop yields, and give rise to a moderate risk of drought stress for those crops which are grown. Occasionally, as represented by Pit 2, land which suffers from significant soil droughtiness also occurs. Such profiles comprise loamy medium sand topsoils over medium sand upper subsoils. These overlie lower subsoils of medium sandy loams and poorly structured clay. In comparison to land classified as Subgrade 3a such profiles have less profile available water. This results from the fact that medium sand and poorly structured clay subsoils retain less water than medium sandy loam subsoils. However, such profiles do not constitute a very large area and thus have not been delineated as a separate mapping unit.

5.6 The slightly higher sloping land classified as Subgrade 3a is restricted by a moderate soil droughtiness limitation because of high amounts of flint within the soil profile. Topsoils typically comprise non-calcareous medium clay loams which are moderately stony (c. 5% flints >2cm and 22% total flints by volume). These overlie similarly textured upper subsoils which are slightly to moderately stony (c. 10-35% total flints by volume). Due to the very dry and stony subsoil conditions at the time of survey all of the soil borings within this area proved impenetrable to an auger between 25-40 cm depth. Consequently a soil inspection pit (Pit 1) was dug to assess conditions at depth. From this pit it could be seen that at approximately 40 cm depth the profiles pass into moderately stony (c. 25% total flints by volume) sandy clay loams which are gleyed as a result of fluctuating groundwater levels. At about 60 cm depth these pass into moderately to very stony (c. 35% total flints by volume) clay lower subsoils which are also gleyed. In comparison to soil, flints retain much less moisture available for uptake by crop roots. Consequently the interaction between the soil textures, profile stone contents and moderate subsoil structures with the relatively dry climatic regime

means

which prevails at this locality this land can be classified as no better than Subgrade 3a.

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Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

British Geological Survey (1976), Sheet No. 288, Maidstone, 1:50,000 Series (solid and drift edition).

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

Meteorological Office (1989), Climatological Data for Agricultural Land Classification.

Soil Survey of England and Wales (1983), Sheet 6, Soils of South East England, 1:250,000 and accompanying legend.