WILTSHIRE MINERALS LOCAL PLAN: DOWN FIELD FARM, GREAT SOMERFORD

AGRICULTURAL LAND CLASSIFICATION SURVEY

SUMMARY

The survey was carried out by ADAS on behalf of MAFF as part of its statutory role in the preparation of the Wiltshire Minerals Local Plan. The fieldwork at Down Field Farm, Great Somerford was completed in May 1995 at a scale of 1:10,000. Data on climate, soils, geology and from previous Agricultural Land Classification (ALC) Surveys was used and is presented in the report. The distribution of grades is shown on the accompanying ALC map and summarised below. Information is correct at this scale but could be misleading if enlarged.

Distribution of ALC grades: Down Field Farm

Grade	Area (ha)	% of Survey Area	% of Agricultural Land (30.8 ha)
3a	20.1	63.0	65.3
3b	10.7	33.5	34.7
Non-agric	11	3.4	0.0
TOTAL	31.9	100.0	100.0

Over half of the site is best and most versatile. These soils have a moderate droughtiness limitation caused by light textured stony subsoils. The southern part of the site has a moderate wetness limitation imposed by the presence of slowly permeable subsoils.

1. INTRODUCTION

An Agricultural Land Classification (ALC) Survey was carried out in May 1995 at Down Field Farm, Great Somerford on behalf of MAFF as part of its statutory role in the preparation of the Wiltshire Minerals Local Plan. The fieldwork covering 31 .9 ha of land was conducted by ADAS at a scale of 1:10,000 with approximately one boring per hectare of agricultural land. A total of 30 auger borings were examined and 3 soil profile pits used to assess subsoil conditions.

The published provisional one inch to the mile ALO map of this area (MAFF 1973) shows the grades of the site at a reconnaissance scale. Grade 4 is mapped along the River Avon and the drains running into the river in the east and west. There is a lobe of Grade 3 from the north into the site. To the west of the site Grade 2 is mapped.

The recent survey supersedes this map having been carried out at a more detailed level and using the 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 long-term limitations on agricultural use. The grading takes account of the top 120 cm of the soil profile. A description of the grades used in the ALC system can be found in Appendix 2.

2. CLIMATE

The grade of the land is determined by the most limiting factor present. The overall climate is considered first because it can have an overriding influence on restricting land to a lower grade despite other favourable conditions.

Estimates of climatic variables were interpolated from the published agricultural climate dataset (Meteorological Office 1989). The parameters used for assessing overall climate are accumulated temperature, a measure of the relative warmth of a locality, and average annual rainfall, a measure of overall wetness. The results shown in Table 1 indicate there is no overall climatic limitation.

Table 1: Climatic Interpolations: Down Field Farm

Grid Reference		ST 973 822
Altitude (m)		57
Accumulated Temperature (day º C)		1471
Average Annual Rainfall (mm)		736
Overall Climatic Grade		1
Field Capacity Days		166
Moisture deficit (mm):	Wheat	104
	Potatoes	96

Climatic data on Field Capacity Days (FCD) and Moisture Deficits for wheat and potatoes are also shown. These data are used in assessing the soil wetness and droughtiness limitations referred to in later sections.

3. RELIEF AND LANDCOVER

The site occupies flat land beside the River Avon at an altitude of 57 m AOD. At the time of survey the fields beside the River Avon were in grass leys. The 2 northern fields were

planted with maize and cereals. The small field south of Down Field Farm was in Set-aside.

4. GEOLOGY AND SOILS

The geology of the site is shown on the published 1:63,360 scale Solid and Drift geology map, Sheet 252, Institute of Geological Sciences 1974.

The area of land beside the River Avon is mapped as recent Alluvium. The area to the north is mapped as River Terrace deposits, First in the east and Second in the west.

The soils were mapped by the Soil Survey of England and Wales in 1983 at a reconnaissance scale of 1:250,000. Two soils are mapped. Along the River Avon the Fladbury 1 Association is shown described as stoneless clayey soils, which are in places calcareous and are variably affected by groundwater. To the north the Badsey 1 Association is mapped. These soils are described as well drained calcareous and non-calcareous fine loamy soils over limestone gravel. There may be some deep fine loamy soils and fine loamy soils over gravel with similar soils but shallower soils affected by groundwater.

The soils found during the recent survey follow the mapped Associations, but with a larger extent of Fladbury in the southern fields.

5. AGRICULTURAL LAND CLASSIFICATION

The distribution of ALC grades is shown in Table 2 and on the accompanying ALC map. This information could be misleading if shown at a larger scale.

Table 2: Distribution of ALC grades: Down Field Farm

Grade	% of Area (ha)	% of Survey Area	Agricultural Land (30.8 ha)
3a	20.1	63.0	65.3
3b	10.7	33.5	34.7
Non-agric	1.1	3.4	0.0
TOTAL	31.9	100.0	100.0

Subgrade 3a

The northern part of the site experiences a moderate droughtiness limitation. The soils are well drained and are Wetness Class I (see Appendix 3). The topsoil textures in this area are medium clay loams and medium silty clay loams. There is generally an upper subsoil of heavy clay loam before the sandier, stony horizons. The stone content of the upper horizons was measured as less than 10%. In the stony lower horizons stone contents between 44% and 72% were measured, with all but one horizon less than 70% stone. These stony horizons hold valuable water required for crop growth and roots were observed into these horizons. There are small areas within this unit with higher stone contents higher in the profile which are more droughty but at the scale of mapping are not included as a separate mapping unit.

Subgrade 3b

Beside the River Avon, the soil texture is much heavier with heavy clay loam and clay topsoils. The subsoils are slowly permeable. These soils are Wetness Class IV and have a moderate wetness limitation.

Resource Planning Team
Taunton Statutory Unit
May 1995

APPENDIX 1

REFERENCES

INSTITUTE OF GEOLOGICAL SCIENCES (1974) Solid and Drift Edition, Sheet 252, Swindon, 1:63,360.

MAFF (1973) Agricultural Land Classification Map, Sheet 157, Provisional 1:63,360 scale.

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

METEOROLOGICAL OFFICE (1989) Climatological Data for Agricultural Land Classification.

SOIL SURVEY OF ENGLAND AND WALES (1983) Sheet 5, Soils of South West England, 1:250,000 scale.

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 include 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. 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.

Descriptions of other land categories used on ALC maps

Urban

Built-up or ‘hard’ uses with relatively little potential for a return to agriculture including: housing, industry, commerce, education, transport, religious buildings, cemeteries. Also, hard-surfaced sports facilities, permanent caravan sites and vacant land; all types of derelict land, including mineral workings which are only likely to be reclaimed using derelict land grants.

Non-agricultural

‘Soft' uses where most of the land could be returned relatively easily to agriculture, including: private park land, 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.

Agricultural buildings

Includes the normal range of agricultural buildings as well as other relatively permanent structures such as glasshouses. Temporary structures (eg polythene tunnels erected for lambing) may be ignored.

Open water

Includes lakes, ponds and rivers as map scale permits.

Land not surveyed

Agricultural land which has not been surveyed.

Where the land use includes more than one of the above land cover types, eg buildings in large grounds, and where map scale permits, the cover types may be shown separately. Otherwise, the most extensive cover type will usually be shown.

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

APPENDIX 3

DEFINITION OF SOIL WETNESS CLASSES

Wetness Class I

The soil profile is not wet within 70cm depth for more than 30 days in most years.

Wetness Class II

The soil profile is wet within 70cm depth for 31-90 days in most years or, if there is no slowly permeable layer within 80cm depth, it is wet within 70cm for more than 90 days, but not wet within 40cm depth for more than 30 days in most years.

Wetness Class III

The soil profile is wet within 70cm depth for 91-180 days in most years or, if there is no slowly permeable layer within 80cm depth, it is wet within 70cm for more than 180 days, but only wet within 40cm depth for between 31 and 90 days in most years.

Wetness Class IV

The soil profile is wet within 70cm depth for more than 180 days but not within 40cm depth for more than 210 days in most years or, if there is no slowly permeable layer within 80cm depth, it is wet within 40cm depth for 91-210 days in most years.

Wetness Class V

The soil profile is wet within 40cm depth for 211-335 days in most years.

Wetness Class VI

The soil profile is wet within 40cm depth for more than 335 days in most years.

Notes: The number of days specified is not necessarily a continuous period. ‘In most years’ is defined as more than 10 out of 20 years.

Source: Hodgson, J M (in preparation) Soil Survey Field Handbook (revised edition).