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Wiltshire Minerals Local Plan
South of Cox's Farm, Marston Meysey
Agricultural Land Classification

Prepared for MAFF by
G M Shaw
ADAS Statutory Unit
Bristol

WILTSHIRE MINERALS LOCAL PLAN
SOUTH OF COX'S FARM, MARSTON MEYSEY
AGRICULTURAL LAND CLASSIFICATION

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WILTSHIRE MINERALS LOCAL PLAN: SOUTH OF COX'S FARM, MARSTON MEYSEY

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 south of Cox's Farm, Marston Meysey was completed in April 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: South of Cox's Farm

Grade	Area (ha)	% of Survey Area	% of Agricultural Land (4.3 ha)
3a	4.3	100	100
TOTAL	4.3	100	100

The majority of the site experiences moderate wetness limitations and is all best and most versatile. The profiles are variable but generally heavy silty clay loam topsoils overlie clays and lighter stonier horizons.

1. INTRODUCTION

An Agricultural Land Classification (ALC) Survey was carried out in April 1995 south of Cox's Farm, Marston Meysey on behalf of MAFF as part of its statutory role in the preparation of the Wiltshire Minerals Local Plan. The fieldwork covering 4.3 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 6 auger borings were examined and 2 soil profile pits used to assess subsoil conditions.

The published provisional one inch to the mile ALC map of this area (MAFF 1973) shows the grades of the site at a reconnaissance scale as Grade 2.

Land to the north, west and south was surveyed in 1993 also in connection with the Wiltshire Minerals Local Plan and showed Subgrade 3a in these areas adjacent to the current survey.

The recent survey supersedes the 1973 one inch to the mile ALC 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: South of Cox's Farm

Grid Reference	SU 143 468
Altitude (m)	76
Accumulated Temperature (day °)	1441
Average Annual Rainfall (mm)	689
Overall Climatic Grade	1
Field Capacity Days	156
Moisture deficit (mm):	
Wheat	105
Potatoes	97

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 is flat at an altitude of 76 m. This is slightly higher than the River Thames to the south. Previous survey work indicated this area is not at risk from flooding. At the time of survey the 2 western fields were being used for horse grazing and had stables and associated hard standings. The eastern field 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 whole site is mapped as Recent first terrace River Terrace Deposits.

The soils were mapped by the Soil Survey of England and Wales in 1983 at a reconnaissance scale of 1:250,000. The whole site is mapped as the Badsey 2 Association. These soils are described as well drained calcareous fine loamy soils over limestone gravel with some similar soils affected by groundwater.

Two types of soil were found during the recent survey. In the east medium silty clay loam topsoils were above clay subsoils. The subsoils were increasingly mottled and slowly permeable from 50 cm. The soils in the west had heavier topsoils (heavy clay loam) over clay upper subsoils over lighter lower subsoils. These profiles were also mottled but the wetness was caused by groundwater.

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: South of Cox's Farm

Grade	Area (ha)	% of Survey Area	% of Agricultural Land (4.3 ha)
3a	4.3	100	100
TOTAL	4.3	100	100

Subgrade 3a

All of the site has been mapped as Subgrade 3a. Two types of soil were found as described in Section 4. In the west the soils were gleyed in the subsoil but there was no slowly permeable layer. The upper subsoil although clay was too well structured and the lower subsoil was porous with a stone content of 46% (as measured in a soil profile pit). These soils are Wetness Class II (see Appendix 3) and experience a moderate wetness limitation caused by high groundwater levels for part of the year. In the east slowly permeable layers and gleying were found in the lower subsoils from 50 cm. These soils are Wetness Class III. The lighter topsoils allow these soils also to be Subgrade 3a.

Resource Planning Team
Taunton Statutory Unit
12 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 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 landcover types, eg buildings in large grounds, and where 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 70 cm depth for more than 30 days in most years.

Wetness Class II

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

Wetness Class III

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

Wetness Class IV

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

Wetness Class V

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

Wetness Class VI

The soil profile is wet within 40 cm 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).

SITE NAME		PROFILE NO.	SLOPE AND ASPECT		LAND USE		Av Rainfall: 689 mm		PARENT MATERIAL			
South of Cox's Farm		Pit 1	0°		PGR		ATO: 1441 day °C		First Terrace River Deposits			
JOB NO.		DATE	GRID REFERENCE		DESCRIBED BY		FC Days: 156		SOIL SAMPLE REFERENCES			
26/95		25/4/95	SU 1429 9680 ASP 4		GMS		Climatic Grade: 1		RPT/GMS 496, 497			
							Exposure Grade: 1					

Horizon No.	Lowest Av. Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness: Size, Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Mangan Concs	Structure: Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form
1	28	HZCL	10YR42	<1% HR >2mm (S+D)	None	None	MCSAB tending to prismatic	Friable	-	Good	MVF		Clear Smooth
2	55	C	10YR64, 63	1% HR >2mm rest was mang nodules (S+D)	CDFOG 10YR66, 62	Common	MCSAB tending to prismatic	Friable	Mod	Low	CVF		Clear Smooth
3	90+	MZCL	10YR64	46% HR >2mm (S+D)	CDFOG 10YR66, 62	Few	MCSAB	Friable	Mod	Good	FVF		

Profile Gleyed From: 28 cm	Available Water	Wheat: 129 mm	Final ALC Grade: 3a
Depth to Slowly Permeable Horizon: None		Potatoes: 110 mm	
Wetness Class: II	Moisture Deficit	Wheat: 105 mm	Main Limiting Factor(s): Wetness
Wetness Grade: 3a		Potatoes: 97 mm	
	Moisture Balance	Wheat: 24 mm	Remarks: Horizon 3 sand and stone increases to stated characteristics. Water filled pit to 75 cm.
		Potatoes: 13 mm	
	Droughtiness Grade:	2 (Calculated to 120 cm)	

SITE NAME		PROFILE NO.		SLOPE AND ASPECT		LAND USE		Av Rainfall: 689 mm		PARENT MATERIAL		
South of Cox's Farm		Pit 2		0°		PGR		ATO: 1441 day °C		First Terrace River Deposits		
JOB NO.		DATE		GRID REFERENCE		DESCRIBED BY		FC Days: 156		SOIL SAMPLE REFERENCES		
26/95		25/4/95		SU 144 969		GMS		Climatic Grade: 1		RPT/GMS 498		
Exposure Grade: 1												

Horizon No.	Lowest Av. Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness: Size, Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Mangan Concs	Structure: Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form
1	30	MZCL	10YR42	<1% HR	None	None	WMSAB	Friable		Good	MVF		Clear Smooth
2	50	C	2.5Y54	Neg	FFFO	None	MCSAB	Friable	Mod	Low	MVF		Clear Smooth
3	80	C	2.5Y64	None	MDFOG 10YR46, 52	None	WCSAB	Friable	Mod	Low (in places good)	FVF		Gradual Smooth
4	120	SC	10YR62	20% HR (Vis)	MDMO 10YR56	None	WCSAB	Friable	Mod	Low	FVF		

Profile Gleyed From: 50 cm	Available Water	Wheat: 145 mm	Final ALC Grade: 3a
Depth to Slowly Permeable Horizon: 50 cm		Potatoes: 121 mm	Main Limiting Factor(s): Wetness
Wetness Class: III	Moisture Deficit	Wheat: 105 mm	
Wetness Grade: 3a		Potatoes: 97 mm	Remarks:
	Moisture Balance	Wheat: 40 mm	
		Potatoes: 24 mm	
	Droughtiness Grade:	1 (Calculated to 120 cm)	