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WILTSHIRE MINERALS LOCAL PLAN
S87 LAND NORTH OF CALCUTT, CRICKLADE

AGRICULTURAL LAND CLASSIFICATION
REPORT OF SURVEY

Resource Planning Team
Taunton Statutory Unit

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AGRICULTURAL LAND CLASSIFICATION

Report of Survey

1. SUMMARY

Fifty three hectares of land north of Calcutt, Cricklade were graded using the Agricultural Land Classification (ALC) System in November 1992 and February 1993. The survey was carried out on behalf of MAFF as part of its statutory role in the preparation of the Wiltshire Minerals Local Plan.

The fieldwork was carried out by ADAS (Resource Planning Team, Taunton Statutory Unit) at a scale of 1:10,000. The information is correct at this scale but any enlargement would be misleading. A total of 49 auger borings and 2 soil profile pits were examined.

The distribution of ALC grades identified in the survey area is detailed below and illustrated on the accompanying map.

Distribution of ALC grades: North of Calcutt, Cricklade

Grade	Area (ha)	% of Survey Area	% of Agricultural Land	
3a	16.1	30.1	30.2	
3b	33.7	63.0	63.1	
4	3.6	6.7	6.7	
Non Agric	0.1	0.2	0.0	
TOTAL	53.5	100%	100%	(53.4 ha)

There are no climatic or site limitations for the survey area. The main limitation in the survey area is wetness although in part this is matched by a droughtiness limitation. The latter areas are downgraded to Subgrade 3a whilst in areas where wetness is more severe these are downgraded to Subgrade 3b. Most of the site also experiences flooding and is downgraded to Subgrade 3a, 3b or Grade 4 depending on the severity.

2. INTRODUCTION

Fifty three hectares of land north of Calcutt, Cricklade were graded using the Agricultural Land Classification (ALC) System in November 1992 and February 1993. The survey was carried out on behalf of MAFF as part of its statutory role in the preparation of the Wiltshire Minerals Local Plan.

The fieldwork was carried out by ADAS (Resource Planning Team, Taunton Statutory Unit) at a scale of 1:10,000 (approximately one sample point every hectare). The information is correct at this scale but any enlargement would be misleading. A total of 49 auger borings and 2 soil profile pits were examined.

The published Provisional 1" to the mile ALC map of this area (MAFF 1973) shows the site to be Grade 3. The site was surveyed in 1979 as part of the 1:25,000 scale Cotswold Water Park ALC survey. This showed the site as Subgrade 3c except along the river which was mapped as Subgrade 3b.The recent survey supersedes these maps 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).

The ALC provides 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 120cm of the soil profile. A description of the grades used in the ALC System can be found in Appendix 2.

At the time of survey the site was under grass.

3. 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 lower grades despite other favourable conditions.

Estimates of climatic variables were obtained for the site by interpolation from the 5km grid Meteorolgical Office Database (Meteorological Office 1989) and are shown in Table 1.

The parameters used for assessing overall climatic limitation are accumulated temperature, (a measure of the relative warmth of a locality) and average annual rainfall, (a measure of overall wetness). The values shown in Table 1 reveal that there is no overall climatic limitation.

No locally limiting climatic factors such as exposure were noted in the survey area. Climatic data on Field Capacity Days (FCD) and Moisture Deficits for

wheat (MDW) and potatoes (MDP) are also shown. These data are used in assessing the soil wetness and droughtiness limitations referred to in Section 6.

Table 1 Climatic Interpolations: North of Calcutt, Cricklade

Grid Reference		SU 115 937
Height (m)		80
Accumulated Temperature (day deg)		1437
Average Annual Rainfall (mm)		682
Overall Climatic Grade		1
Field Capacity (Days)		155
Moisture Deficit,	Wheat (mm)	106
	Potatoes (mm)	96

4. RELIEF

The site is virtually flat with only a slight rise to the south away from the River Thames. None of the fields have microrelief limitations. The site is at 80m AOD.

5. GEOLOGY AND SOILS

The published one inch scale solid and drift geology map, sheet 252 (Geological Survey of England and Wales 1974) shows the majority of the site to be of Alluvium driftdeposits. There is a small area of First Terrace River deposits and Oxford Clay in the south.

The Soil Survey of England and Wales mapped the soils of the area in 1983, at a reconnaisance scale of 1:250,000. This map shows the soils at the site to be of two associations. The majority of the site is of the Thames Association corresponding mainly to the Alluvial drift. This soil is poorly drained. There is a small area corresponding to the Oxford Clay which is of the Evesham 2 Association, which is similar in nature to the Thames Association.

The soils found in the recent survey show evidence of restricted drainage. In the north of the site this is caused by slowly permeable layers high in the profile, while to the south no slowly permeable layers were found. In this area the soils were also stony at depth.

6. AGRICULTURAL LAND CLASSIFICATION

The distribution of ALC grades identified in the survey area is detailed below and illustrated on the accompanying ALC map. The information is correct at the scale shown but any enlargement would be misleading.

Table 2 Distribution of ALC grades: North of Calcutt

Grade	Area (ha)	% of Survey Area	% of Agricultural Land	
3a	16.1	30.1	30.2	
3b	33.7	63.0	63.1	
4	3.6	6.7	6.7	
Non Agric	0.1	0.2	0.0	
TOTAL	53.5	100%	100%	(53.4 ha)

Subgrade 3a

A third of the site has been graded as Subgrade 3a. These soils show evidence of restrictions in drainage in the form of gleying. Examination of the subsoil structure in a soil profile pit showed that there is no slowly permeable layer. The soils are Wetness Class II and have heavy clay loam topsoils. At depth these soils become stony. The stone content was measured in the soil profile pit by sieving and displacement in water and found to be 38% hard stones from 43cm increasing to 66% from 50cm. This imposes a droughtiness limitation on the soils also restricting the soils to Subgrade 3a. Most of this area experiences flooding during the winter, frequently but of short duration which does not further downgrade the land.

Subgrade 3b

Some of these soils are similar to those described above but have been downgraded on the basis of flood risk. In this area the winter flooding occurs frequently but only lasts for 2-4 days. The rest of the soils are more poorly drained and have slowly permeable layers in the profile as confirmed by examining the subsoil structure. The soils are Wetness Class IV and also have heavy clay loam topsoils. Some of these soils also suffer from a risk of flooding but the risk is equal to the downgrading resulting from wetness.

Grade 4

In this area the risk from flooding is greater than that above because the duration of the flood is longer. Whilst the soils are similar to those described under Subgrade 3a and 3b these areas must been downgraded to Grade 4 on the basis of flood risk. The versatility of the land is substantially reduced by this risk.

APPENDIX 1

REFERENCES

GEOLOGICAL SURVEY OF ENGLAND AND WALES (1974) *Solid and drift* edition. Sheet 252 Swindon, 1:63,360 scale

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) Published climatic data extracted from the agroclimatic dataset, compiled by the Meteorological Office

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

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 682	PARENT MATERIAL
North of Calcutt	1	Flat	Permanent Grass	ATO :- 1437	Alluvium/First Terrace Deposits
				FC Days :- 155	
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY	Climatic grade :- 1	
58/92	16/2/93	SU 116 937	GMS/PRW		

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
1	10	10YR32	HCL	0	None	Moderate medium sub-angular blocky	Many	Moderate	Friable	Many fine	No	None	Abrupt, smooth
2	20	10YR53	C	0	Few faint	Moderate medium sub-angular blocky	Many	Moderate	Friable	Many fine	Slightly calcareous	None	Abrupt, smooth
3	43	10YR53	C	0	Common ochreous gleyed	Mod, coarse, sub-angular	<0.5% 0.5mm	Moderate	Friable	Common fine	Slightly calcareous	None	Clear, smooth
4	50	10YR64, 51	C	38% hard rock sieved	Common ochreous	Weak medium sub-angular	>0.5% 0.5mm	Good	Friable	Common fine	Calcareous	None	Abrupt, smooth
5	90	10YR73	MS	66% HR sieved	Few ochreous	-	Many	Moderate	Loose	Few fine	Calcareous	None	-

Profile Gleyed From:- 20cm

Depth to Slowly Permeable Horizon:- None

Wetness Class :- II

Wetness Grade :- 3a

Available Water Wheat :- 92mm

Potatoes :- 85mm

Moisture Deficit Wheat :- 105mm

Potatoes :- 96mm

Moisture Balance Wheat :- -13mm

Potatoes :- -11mm

Droughtiness Grade :- 3A (to 120cm)

Final ALC Grade :- 3a

Main Limiting Factor(s) :- Wetness

Remarks :-

Water table at 70cm. Roots at least to water table.

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 682	PARENT MATERIAL
North of Calcutt	2	0	Permanent Grass	ATO :- 1437	Alluvium
				FC Days :- 155	
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY	Climatic grade :- 1	
58/92	16/2/93	SU 119 939	GMS/PRW		

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
1	16	10YR33	HCL	-	None	MMSAB	Good	-	Friable	Many fine	Yes	None	Smooth, abrupt
2	32	10YR53	C	-	codm (gleyed)	MCSAB	Good	Moderate	Friable	Common fine	Slightly	None	
3	80+	25YR50	C	-	mdom (gleyed)	MCAB	Low	Moderate	Friable	Few fine	None	None	

Profile Gleyed From:- 16cm

Depth to Slowly Permeable Horizon:- 32cm

Wetness Class :- IV

Wetness Grade :- 3b

Available Water Wheat :- 139mm

Potatoes :- 115mm

Moisture Deficit Wheat :- 105mm

Potatoes :- 96mm

Moisture Balance Wheat :- +34mm

Potatoes :- +19mm

Droughtiness Grade :- 1 (to 120cm)

Final ALC Grade :- 3b

Main Limiting Factor(s) :- Wetness

Remarks :-

Pit dug to 80cm. Water table at 60cm. 3b Flood risk.