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WILTSHIRE MINERALS LOCAL PLAN
S70 NORTH FARM, CASTLE EATON

**AGRICULTURAL LAND CLASSIFICATION
REPORT OF SURVEY**

Resource Planning Team
Taunton Statutory Unit

February 1993

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WILTSHIRE MINERALS LOCAL PLAN
S70 NORTH FARM, CASTLE EATON

AGRICULTURAL LAND CLASSIFICATION

Report of Survey

1. SUMMARY

Fifty seven hectares of land at North Farm, Castle Eaton 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 47 auger borings and 5 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 Farm, Castle Eaton

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3b	28.1	49.0	49.0
4	<u>29.3</u>	<u>51.0</u>	<u>51.0</u>
TOTAL	57.4	100%	100%

There are no climatic or site limitations for the survey area. The main limitation in the survey area is wetness, downgrading the site to Subgrade 3b. Part of the site also experiences flooding. The most severe flood risk is along the river further downgrading that land to Grade 4, whilst further from the river the risk is much less and the wetness limitation overrides it.

2. INTRODUCTION

Fifty seven hectares of land at North Farm, Castle Eaton 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 47 auger borings and 5 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 area was surveyed in 1979 at 1:25,000 scale as part of the Cotswold Water Park ALC survey which mapped the area as Subgrade 3b with a small area of Subgrade 3c in the west. 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 north of the area was under grass, most was under winter cereals, with a small area being used for copicing and the central field had maize residue.

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 Meteorological 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 Farm, Castle Eaton

Grid Reference	SU 135 956
Height (m)	75
Accumulated Temperature (day deg)	1441
Average Annual Rainfall (mm)	684
Overall Climatic Grade	1
Field Capacity (Days)	155
Moisture Deficit,	
Wheat (mm)	106
Potatoes (mm)	97

4. RELIEF

The site is virtually flat. None of the fields have microrelief limitations. The site is at 75m 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 area beside the River Thames has Alluvium deposits whilst the remainder has First Terrace River deposits.

The Soil Survey of England and Wales mapped the soils of the area in 1983, at a reconnaissance 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 river terrace deposits, in the south west, of the Badsey 2 Association, described as mainly well drained fine loamy soils over calcareous gravel.

The soils found in the recent survey show evidence of restricted drainage caused by slowly permeable layers in the subsoils. Some of the soils become stony at depth but this does not provide a greater limitation in terms of droughtiness.

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 Farm, Castle Eaton

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3b	28.1	49.0	49.0
4	<u>29.3</u>	<u>51.0</u>	<u>51.0</u>
TOTAL	57.4	100%	100%

Subgrade 3b

All of the site would be Subgrade 3b if there was no flood risk. However only the part of the site away from the River Thames does not experience a limiting flood risk. The soils are poorly drained with slowly permeable layers in the upper subsoils. The soils are Wetness Classes III and IV. Topsoils are clay. Some of the soil profiles have stonier subsoils, but the limitation imposed by droughtiness is not greater than that of wetness. A small part of this area does experience occasional flooding but the wetness limitation is greater.

Grade 4

Half of the site has been downgraded from Subgrade 3b to Grade 4 on the basis of the risk imposed by flooding. Flooding occurs in winter on a frequent basis and generally lasts for several days. The versatility of the land is substantially reduced by the risk to agricultural production.

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 :- 684			PARENT MATERIAL				
North Farm Castle Eaton		Pit 1	0		Permanent grazing	ATO :- 1441			Alluvium				
JOB NO		DATE	GRID REFERENCE		DESCRIBED BY			Climatic grade :- 1					
68/92		November 92	SU 139 959		GMS								
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	23	10YR42	C	0	None	MCSAB	Good	-	Friable				
2	43	10YR52	C	0	10YR58/61 - many gleyed	MCAB	Good	Moderate	Friable				
3	120	10YR61	C	0	75YR58 - many gleyed	SVCAB	<0.5	Moderate <u>SPL</u>	Friable				
Profile Gleyed From:- 23cm				Available Water Wheat :- 141				Final ALC Grade :- 4					
Depth to Slowly Permeable Horizon:- 43				Potatoes :- 117				Main Limiting Factor(s) :- Flood risk					
Wetness Class :- III				Moisture Deficit Wheat :- 106				Remarks :-					
				Potatoes :- 97									
Wetness Grade :- 3B				Moisture Balance Wheat :- +35				Augered to 120cm, where soil became sandier and stonier.					
				Potatoes :- +20									
				Droughtiness Grade :- 1									

SITE NAME		PROFILE NUMBER		SLOPE AND ASPECT		LAND USE		Av Rainfall :- 684			PARENT MATERIAL		
North Farm, Castle Eaton		Pit 2		0		Maize		ATO :- 1441			Alluvium		
JOB NO		DATE		GRID REFERENCE		DESCRIBED BY		FC Days :- 155					
68/92		November 92		SU 137 959		GMS		Climatic grade :- 1					
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	18	10YR42	C	None	None	SCSAB	>0.5	-	Friable				
2	60	10YR53 (ped = 10YR52)	C	None	10YR58 - many gleyed	SCAB	<0.5	Moderate	Friable	<u>SPL</u>			
3	75	25Y64	HCL	40% hard rock sieved	Gleyed		<0.5	Moderate		<u>SPL</u>			
4	90	10YR76	LCS	40% hard rock sieved	Gleyed		<0.5	Moderate		<u>SPL</u>			

Profile Gleyed From:- 18cm Depth to Slowly Permeable Horizon:- 18cm Wetness Class :- IV Wetness Grade :- 3B	Available Water Wheat :- 107 Potatoes :- 111 Moisture Deficit Wheat :- 106 Potatoes :- 97 Moisture Balance Wheat :- +1) Potatoes :- +14) Calc'd down to 90cm Droughtiness Grade :- 3A)	Final ALC Grade :- 3B Main Limiting Factor(s) :- Wetness Remarks :- Sub structure boarderline. Medium/coarse also angular/sub-angular.
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SITE NAME North Farm, Castle Eaton		PROFILE NUMBER Pit 3	SLOPE AND ASPECT 0	LAND USE Cereals	Av Rainfall :- 684 ATO :- 1441 FC Days :- 155 Climatic grade :- 1	PARENT MATERIAL First Terrace River Deposits	
JOB NO 68/92		DATE November 1992	GRID REFERENCE SU 136 955	DESCRIBED BY GMS			

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	23	75YR34	C	None	None	MCSAB	>0.5	-	Friable				
2	50	10YR53	C	None	Common 10YR56	MCAB	<0.5	Moderate	Friable	SPL			

Profile Gleyed From:- Depth to Slowly Permeable Horizon:- 23 Wetness Class :- IV Wetness Grade :- 3B	Available Water Wheat :- 87 Potatoes :- 87 Moisture Deficit Wheat :- 106 Potatoes :- 97 Moisture Balance Wheat :- -19) Potatoes :- -10) Calc/d to 50cm Droughtiness Grade :- 3A)	Final ALC Grade :- 3B Main Limiting Factor(s) :- Wetness Remarks :- Subsoil structure boarderline. Medium/coarse; angular/sub-angular. Pit filled immediately to surface with water therefore could not get down into stonier subsoils.
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SITE NAME North Farm, Castle Eaton		PROFILE NUMBER 4		SLOPE AND ASPECT Flat		LAND USE Permanent Grassland		Av Rainfall :- 684 ATO :- 1441 FC Days :- 155 Climatic grade :- 1		PARENT MATERIAL Alluvium			
JOB NO 68/92		DATE 16/2/93		GRID REFERENCE SU 1370 9600		DESCRIBED BY 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	30	10YR33	C	18% Hard rock sieved	None	MCSAB	Many	Moderate	Friable	Many fine	Calc	No	Sharp, smooth
2	56	10YR51	C	None	10YR58 Gleyed	MCAB (SPL)	<0.5%	Moderate	Friable	Very fine Common	Calcium nodules in non calc matrix	No	Clear, smooth
3	120	10YR61	C	None	10YR58 M gleyed	MCSAB (tending to angular) = weak SPL	<0.5%	Moderate	Friable	Very fine Common	Calcium nodules in non calc matrix	No	-

Profile Gleyed From:- 30cm Depth to Slowly Permeable Horizon:- 35cm Wetness Class :- IV Wetness Grade :- 3b	Available Water Wheat :- 133 Potatoes :- 109 Moisture Deficit Wheat :- 106 Potatoes :- 97 Moisture Balance Wheat :- 27 Potatoes :- 12 Droughtiness Grade :- 2	Final ALC Grade :- 4 Main Limiting Factor(s) :- Flood risk Remarks :- Water table at 70cm. Pit dug to 100cm. Augered to 130 cm (clay).
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SITE NAME North Farm Castle Eaton		PROFILE NUMBER 5	SLOPE AND ASPECT 0		LAND USE Maize Residue	Av Rainfall :- 684 ATO :- 1441 FC Days :- 155 Climatic grade :- 1		PARENT MATERIAL Alluvium				
JOB NO 68/92		DATE 16/2/92	GRID REFERENCE SU 1350 9570		DESCRIBED BY 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	23	10YR33	C	None	None	MMSAB	Good	-	Friable	Many medium	X	X	Abrupt, smooth
2	87	2.5Y62	C	None	10YR58 M (Gleyed)	MCAB tending to both medium & SAB	Low	Moderate	Friable	Common fine	X	X	Clear, smooth
3	110+	2.5Y64	MCL	35% visual estimate	10YR58 C	-	-	Moderate	-	Few fine	/	X	

Profile Gleyed From:- 23cm Depth to Slowly Permeable Horizon:- 23cm Wetness Class :- IV Wetness Grade :- 3b	Available Water Wheat :- 130 Potatoes :- 117 Moisture Deficit Wheat :- 106 Potatoes :- 97 Moisture Balance Wheat :- +24 Potatoes :- +20 Droughtiness Grade :- 2 (to 110 cm)	Final ALC Grade :- 3b Main Limiting Factor(s) :- Wetness Remarks :- Pit dug to 110cm SPL not brilliant but satisfactory.
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