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WILTSHIRE MINERALS LOCAL PLAN
S63 LAND NORTH EAST OF A419, LATTON

AGRICULTURAL LAND CLASSIFICATION
REPORT OF SURVEY

Resource Planning Team
Taunton Statutory Unit

November 1992

ADAS

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Report of Survey

1. SUMMARY

One hundred and fifty hectares of land north east of the A419 at Latton were graded using the Agricultural Land Classification (ALC) System in October and November 1992. 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 137 auger borings and 6 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: Land north east A419, Latton

Grade Area (ha) % of Survey Area % of Agricultural Land

Grade	Area (ha)	% of Survey Area	% of Agricultural Land	
2	53.3	35.5	35.7	
3a	31.9	21.2	21.3	
3b	57.7	38.4	38.6	
4	6.6	4.4	4.4	
Non Agric	0.7	0.5	100%	(149.5 ha)
TOTAL	150.2	100%		

There are no climatic or site limitations for the survey area. The main limitations across the site are wetness and droughtiness, which downgrade the soil to Grades 2, 3a and 3b depending on the severity of the limitation. There are small areas unaffected by these limitations which are restricted to Grade 2 on the

basis of workability. A small area in the south is downgraded to Grade 4 because of flood risk. Over half of the site is best and most versatile land.

2. INTRODUCTION

One hundred and fifty hectares of land north east of the A419 at Latton were graded using the Agricultural Land Classification (ALC) System in October and November 1992. 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 137 auger borings and 6 soil profile pits were examined.

The published Provisional 1" to the mile ALC map of this area (MAFF 1973) shows the site to be mainly Grade 2 with a small area of Grade 3 in the east and south. The area was surveyed in 1979 at a scale of 1:25,000 as part of the Cotswold Water park ALC survey and mapped the site as Grades 2, 3a and 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 most of the site was under winter cereals and 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 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: Land north east of A419

Grid Reference		SU 095 964	SU 104 951
Height (m)		80	70
Accumulated Temperature (day deg)		1437	1448
Average Annual Rainfall (mm)		693	672
Overall Climatic Grade		1	1
Field Capacity (Days)		158	154
Moisture Deficit,	Wheat (mm)	103	106
	Potatoes (mm)	95	98

4. RELIEF

Most of the site is fairly flat. None of the fields have microrelief limitations. The site is at approximately 70-80m 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 First Terrace River deposits. There is a small area of Kellaway Clays and Second Terrace River Deposits north of Latton Village. There is an area of Alluvium beside the Ampney Brook.

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 mapped as the Badsey 2 Association, described as mainly well drained fine loamy soils over calcareous gravel. Along the Ampney Brook the Kelmscot Association is mapped. These are calcareous fine loamy soils over limestone gravel affected by waterlogging.

The soils found in the recent survey show evidence of restricted drainage and high water tables in some areas. The soils are stony and some have very stony subsoils and this restricts the available water for crop growth in some parts of the site.

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: Land north east of A419

Grade	Area (ha)	% of Survey Area	% of Agricultural Land	
2	53.3	35.5	35.7	
3a	31.9	21.2	21.3	
3b	57.7	38.4	38.6	
4	6.6	4.4	4.4	
Non Agric	0.7	0.5	100%	(149.5 ha)
TOTAL	150.2	100%		

Grade 2

These soils are limited to Grade 2 on the basis of a combination of workability and droughtiness. The topsoil texture of these soils is heavy clay loam. The soils are well drained and are Wetness Class I. The soils have few stones in a heavy clay loam or clay matrix until a depth of about 60cm where the profiles become lighter in texture and the stone content increases to around 40% hard stones. Depending on the depth of the horizons and the stone content there may or may not be a droughtiness limitation. The combination of topsoil texture, local Field Capacity Days and the Wetness Class limit these soils to Grade 2.

Subgrade 3a

In the area mapped as Subgrade 3a there are a few clay topsoils in soils which are otherwise similar to those described above. This heavier topsoil texture further limits the versatility of the soil and they can be no better than 3a.

The remaining area of 3a has soils which are more droughty than the soils described under Grade 2. These soils have higher stone contents in the upper part of the profile (tyoically 18%) and from 60cm the stone content was measured in soil profile pits to be 50-60%. Stone contents in pits in all grades

were measured by sieving known volumes of particular horizons and measuring the volumetric displacement in water.

Subgrade 3b

A few of the soils mapped as Subgrade 3b are even more droughty than the soils above because the stone contents are higher and this limits the available water for crop growth.

The majority of the soils mapped as 3b are poorly drained and have slowly permeable layers in the subsoils. They are Wetness Class IV. The topsoil textures are heavy clay loam and clays. The soils near the Ampney Brook have stony horizons at depth. The slowly permeable layer structures were observed in a soil profile pit.

Grade 4

A small area has been mapped as Grade 4. This area suffers from flooding to such an extent that the versatility of the land is severely reduced.

Non Agricultural

The farm tracks have been mapped as non agricultural.

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 :- 693	PARENT MATERIAL
A419, Latton	Pit 1	-	Ploughed	ATO :- 1437	First Terrace River Deposits
				FC Days :- 158	
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY	Climatic grade :- 1	
64/92	October 1992	SU 093 965	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	28	10YR42	HCL	18% hard rock	-	Weakly dev. CSAB		Good	Friable				
2	41	10YR54	HCL	18% HR	-	Mod. devel. MSAB		Good	Friable				
3	60	10YR68	LMS	41% hard rock	-	Weakly dev. MSAB		Mod.	Very friable				
4	100	10YR86	MS	67% hard rock	-	Weakly dev. MSAB		Mod.	Very friable				
5	120	10YR86	MS	54% hard rock	-	Weakly dev. MSAB		Mod.	Very friable				

Profile Gleyed From:- Not

Depth to Slowly Permeable Horizon:- None

Wetness Class :- I

Wetness Grade :- 2

Available Water Wheat :- 82mm

Potatoes :- 76mm

Moisture Deficit Wheat :- 103mm

Potatoes :- 95mm

Moisture Balance Wheat :- -21mm

Potatoes :- -19mm

Droughtiness Grade :- 3B (just) (to 120 cm)

Final ALC Grade :- 3A

Main Limiting Factor(s) :- Droughtiness

Remarks :-

Only just into 3B on droughtiness. Surrounding borings less stony. All stone contents by sieving and displacement in water.

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 693	PARENT MATERIAL
A419, Latton	Pit 2	-	Ley	ATO :- 1437	Kellaway clay
				FC Days :- 158	
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY	Climatic grade :- 1	
64/92	November 1992	SU 089 961	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	34	25Y52	C	-	Few ochreous	Mod. dev. CSAB	Good	-	Firm	-			
2	87	10YR53 10YR52 (ped)	C	-	Many 10YR58	Mod. develop. MAB	Good	Good	Friable				
3	120	10YR61 10YR71 (ped)	C	-	Common 10YR58	Wk. develop. CSAB	Low	Poor	Firm	SPL			

Profile Gleyed From:-

Depth to Slowly Permeable Horizon:- 87

Wetness Class :- II

Wetness Grade :- 3A

Available Water Wheat :- 170mm

Potatoes :- 133mm

Moisture Deficit Wheat :- 103mm

Potatoes :- 95mm

Moisture Balance Wheat :- 67mm

Potatoes :- 38mm

Droughtiness Grade :- 1 (to 120 cm)

Final ALC Grade :- 3A

Main Limiting Factor(s) :- Wetness

Remarks :-

Pit dug over drain which is efficiently draining soil very close but ineffective short distance away (see pit 6).

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 693	PARENT MATERIAL
A419, Latton	Pit 3	-	Ley	ATO :- 1437	First Terrace River Deposits
				FC Days :- 158	
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY	Climatic grade :- 1	
64/92	November 1992	SU 087 962	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	29	10YR54	C	10% HR	-	WFSAB	Good	-	Friable				
2	90	10YR56	C	7% hard rock	-	Mod. develop. MSAB	Good	Good	Friable				
3	120	10YR74	MSL	55% hard rock	-	Too stony to assess	-	Mod.	-				

Profile Gleyed From:- Not

Depth to Slowly Permeable Horizon:- None

Wetness Class :- I

Wetness Grade :- 2

Available Water Wheat :- 157mm

Potatoes :- 125mm

Moisture Deficit Wheat :- 103mm

Potatoes :- 95mm

Moisture Balance Wheat :- 54mm

Potatoes :- 30mm

Droughtiness Grade :- 1 (to 120cm)

Final ALC Grade :- 2

Main Limiting Factor(s) :- Workability

Remarks :-

On border of 2/3B units.

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 693	PARENT MATERIAL
A419, Latton	Pit 4	-	Permanent Grazing	ATO :- 1437	Alluvium
				FC Days :- 158	
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY	Climatic grade :- 1	
64/92	November 1992	SU 101 958	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	HCL	-	Few ochreous	Mod. devel. CSAB	Good	-	Friable				
2	36	10YR53	C	-	Common 10YR58 Gleyed	Mod. devel. CSAB	<0.5	Mod.	Friable	SPL			
3	58	10YR62	HZCL	-	10YR58/51 - many gleyed	Mod. devel. CSAB	<0.5	Mod.	Friable				
4	70	10YR73	MS	57% hard rock sieved/displ.	Gleyed.	Too wet to assess	Good	Mod.					

Profile Gleyed From:- 23cm

Depth to Slowly Permeable Horizon:- 23cm

Wetness Class :- IV

Wetness Grade :- 3B

Available Water Wheat :- 106mm

Potatoes :- 103mm

Moisture Deficit Wheat :- 103mm

Potatoes :- 95mm

Moisture Balance Wheat :- +3mm

Potatoes :- +8mm

Droughtiness Grade :- 3A (to 120 cm)

Final ALC Grade :- 3B

Main Limiting Factor(s) :- Wetness

Remarks :-

Water table at 60 cm.

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 693	PARENT MATERIAL
A419, Latton	Pit 6	-	Ley	ATO :- 1437	Kellaway clay
				FC Days :- 158	
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY	Climatic grade :- 1	
64/92	November 1992	SU 089 961	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	34	25Y52	C	-	Few ochreous	Mod. dev. CSAB	Good	-	Firm				
2	87	10YR53 ped = 10YR52	C	-	Many 10YR58 Gleyed	Weakly dev. CSAB	Low	Poor	Firm SPL				
3	120	10YR61 ped = 10YR71	C	-	Common 10YR58 Gleyed	Weakly dev. CSAB	Low	Poor	Firm SPL				

Profile Gleyed From:- 34cm

Depth to Slowly Permeable Horizon:- 34cm

Wetness Class :- IV

Wetness Grade :- 3B

Available Water Wheat :- 128mm

Potatoes :- 105mm

Moisture Deficit Wheat :- 103mm

Potatoes :- 95mm

Moisture Balance Wheat :- +25mm

Potatoes :- +10mm

Droughtiness Grade :- 2 (to 120cm)

Final ALC Grade :- 3B

Main Limiting Factor(s) :- Wetness

Remarks :-

Not dug over drain (re = Pit 2) therefore more representative of unit.

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 693	PARENT MATERIAL
A419, Latton	Pit 5	-	Cereals	ATO :- 1437	First Terrace River Deposits
				FC Days :- 158	
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY	Climatic grade :- 1	
64/92	November 1992	ST 910 967	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	24	10YR43	HCL	19% hard rock	-	Mod. devel. CSAB	Good	-	Friable				
2	52	10YR56	HCL	15% hard rock	-	Mod. devel. CSAB	Good	Mod.	Friable		Yes		
3	70	10YR56	HCL	45% hard rock	-	Mod. devel. CSAB	Good	Mod.	Friable		Yes		
4	85	10YR83	MS	75% hard rock - gravel non porous	-	Too stony to assess	Good	Mod.	-		Yes		

Profile Gleyed From:- Not

Depth to Slowly Permeable Horizon:- None

Wetness Class :- I

Wetness Grade :- 2

Available Water Wheat :- 86mm

Potatoes :- 91mm

Moisture Deficit Wheat :- 103mm

Potatoes :- 95mm

Moisture Balance Wheat :- -8mm

Potatoes :- -4mm

Droughtiness Grade :- 3A (to 120 cm)

Final ALC Grade :- 3A

Main Limiting Factor(s) :- Droughtiness

Remarks :-

IMP at 85 cm. Stone % by sieving and displacement in water.